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THE
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Gravel Walls.

A correspondent inquires of us if gravel walls for houses have been a failure, and if they have, thinks the fact should be extensively circulated as a matter of useful information. We have been told that gravel walls for houses have one bad feature, namely, they admit a great amount of moisture during long rain storms. But for this defect (which can be remedied by a coating of cheap mastic cement,) we are assured they are both cheap, handsome, and durable. But we wish it to be distinctly understood, that no material, however strong, beautiful and cheap it may be for walls, should ever be employed for house building if it does not exclude the moisture in wet weather.

Another Scientific Expedition.

Professors More and Francis, of Iowa, have gone on an exploring tour to the Andean regions of the Equador. The object is geographical and geological research. They will spend some months among the volcanic regions of the Andes, respecting which little is now known. Such men extend the area of useful knowledge; we wish them success, and a safe return from their perilous enterprise.

New Barrel Head Machine.

Our engraving illustrates an invention for cutting out and planing barrel heads, by N. W. Robinson, of Keeseville, N. Y. The drawing is from a working machine now on exhibition at the American Institute Fair, Crystal Palace, N. Y., where its operations attract great attention. The rough boards are fed in on one side of the machine, and transformed, with great rapidity, into round barrel heads, planed, beveled, and finished in the most perfect manner.

The heads may be composed of two or more pieces, and the boards, laid side by side, are fed in by rollers, upon the ring bed, A, where they rest. B is a pedal, connecting, beneath the floor, with rod C, and by lever D with rod E. The latter, at its lower end, connects with another ring, F, whose periphery is furnished with a series of clamps or points, each clamp being separate and pressed down by a spring. The boards having been fed in upon ring A, the operator pushes down pedal B, with his foot, which causes ring F, with its many clamps, to press down upon the boards and hold them fast.

The operator now presses down the clutch lever, G, which lifts the revolving shaft, H, and brings the cutters, I, up through ring A, against the under side of the boards. The cutters, I, mark the circle of the barrel head, and cut half way through the boards. The cutter head, J, to which the cutters, I, are attached, is so made that the cutters may be set further in or out from the center, and be thus accommodated to the cutting of different sized heads.

As soon as the cutters, I, have operated, they are lowered, and the swinging bed, K, which is supported and swings on shaft L, is swung under ring A. Lever M is now raised, and by acting through segments, N, and shaft, O, lifts shaft L, carries bed K up through ring A, and presses it against the under surface of the board. Swing bed K thus forms a firm under support for the barrel head. When lever M is raised, it locks into a notch in rod P, and continues to hold bed K against the bottom of the boards.

MACHINE FOR CUTTING AND PLANING BARREL HEADS.

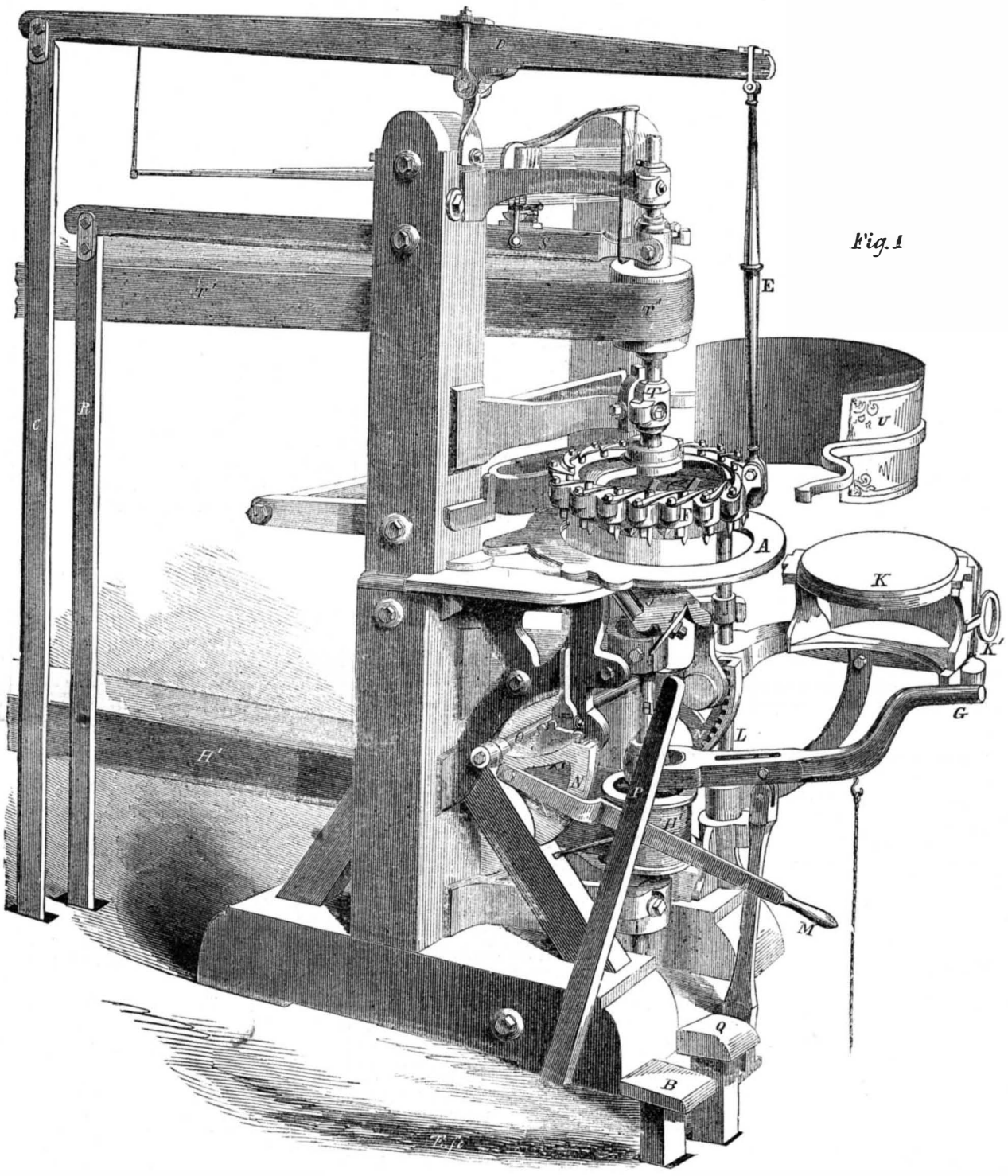

Fig. 1

The operator now presses down pedal Q which, through rod R and lever S, acts on shaft T, and brings its lower end down through ring F, upon the upper surface of the boards. The lower end of shaft T is furnished with cutters which complete the operation, by cutting through the boards, beveling the edges of the head and planing off its surface, all at once, leaving the head perfectly finished. Lever M is now released, bed K lowered and swung out, leaving upon its surface the barrel head complete. K' is the handle by which K is swung in and out. Shaft T is revolved by means of belt T', and shaft H by belt H'. U is a swinging cover, to prevent the chips and shavings from flying about.

Fig. 2 is an enlarged view of the bottom of the tool holder at the extremity of shaft T, by means of which the head is planed, beveled and cut out. In this figure V is the cutter which does the beveling; W cuts out the head, and X are the planes, which smooth the surface; Y are springs which rest on the barrel head and hold it down.

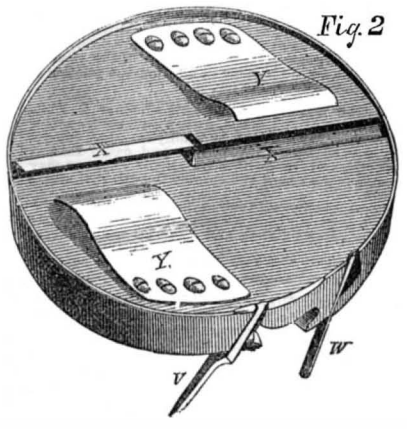

Fig. 2

This machine is strong, substantial, and operates with the greatest success. It dresses the heads to a uniform thickness, or the thickness may be varied at pleasure. We are informed that one man can cut and finish from 150 to 200 heads per hour, with one of these machines, and more with the assistance of another person. The clamps on ring F being all independent, and each pressed down by its own spring, permits the clamping and cutting of heads, out of boards of different thicknesses, at the same time. The handling and sorting of the stuff is thus saved. Neither is it necessary to saw the boards up into short pieces, for the machine works up long boards equally as well as short. We are told that by the common hand method of making barrel heads, a man can only make 80 or 100 per day, but by the use of this machine he can make from 1500 to 2000 heads in the same time. The cutters are all arranged so as to be adjustable to cut different sized heads; they may be also easily taken out for grinding, &c. Flat or crowning heads may be cut, as described. Price $500 and up. For further information apply at the Palace or address the inventor as above. Patented May 6, 1856.

The total amount of foreign emigration to the United States from 1819 amounts to 4,212,624, up to December, 1855. Of these 2,343,445 were natives of Great Britain and Ireland.

Boone's Cordage Machine is advertised in another column.

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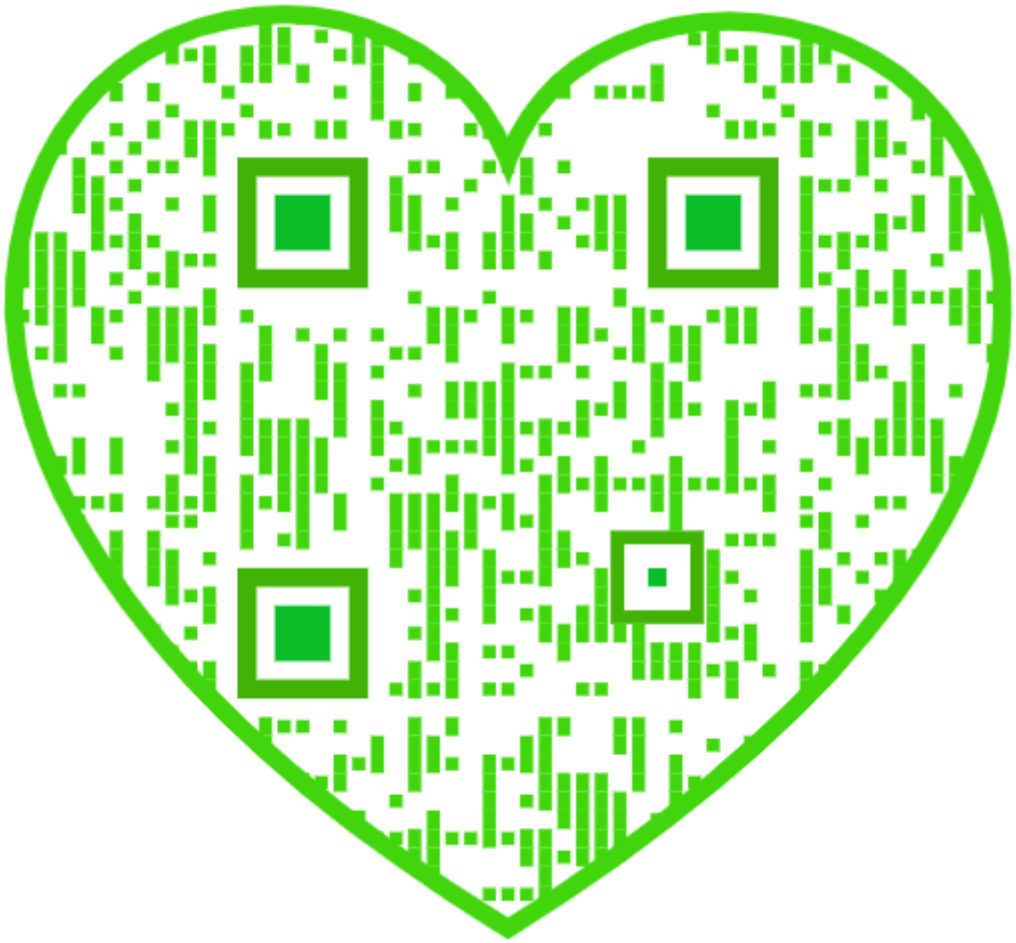

IMPORTANT NOTICE.

When an individual has made an invention, the first inquiry that naturally suggests itself is, "*Can I obtain a Patent?*" A *positive* answer to such questions is only to be had by presenting a formal application for a patent to the government, embracing a petition, and oath, specification, model, two drawings, and the payment of the official fees. Aside from these steps, all that the inventor can do is, to submit his plans to persons experienced in the business of obtaining patents, and solicit their opinions. If they are honorable men, he may confide to them his ideas with perfect safety, and they will inform him whether or not they regard his invention as patentable.

Those who wish to consult with ourselves on such matters, are at liberty so do so, either in person, at our office, or by correspondence through the mails. For such consultations we make *no charge*. We shall be happy, at all times, to examine inventions, and will give conscientious opinions as to their patentability.

Pen and ink sketches of the improvement, and a written description of the same, should be sent. Write plain; do not use pencil or pale ink, and be brief. Remember that all business committed to our care, and all consultations are kept by us secret and strictly confidential.

Parties wishing to apply for patents are informed that they can have the necessary drawings and documents promptly prepared at this office, on the most reasonable terms. It is not necessary for them to go to the expense of a journey in order to be personally present. All the required business can be just as well arranged by correspondence. Models may be sent by Express.

We have been engaged in the business of procuring patents for years, and have probably had more experience than any other firm in the country, owing to the fact that the amount of business done by us equals, if it does not exceed, that of all other professional patent agents in the United States combined. A large proportion of all the patents annually granted by the American government, are prepared and conducted by our firm.—We have in constant employment an able corps of examiners and draughtsmen, whose duties are so systematically arranged, under our own personal supervision, that every case committed to our care, receives the most careful study and attention, and the most prompt dispatch. In every instance we endeavor so to draw up the claims and prepare the whole case, that the patent, if granted, will stand the test of the courts, and be of value to the owner. Patents secured through our agency are scattered all over the country, and in this respect they speak for themselves.

In addition to the advantages which the long experience, great success, promptness and moderate charges of our firm, in obtaining patents, present to inventors, they are informed that all inventions patented through our establishment, are noticed editorially, *at the proper time*, in the Scientific American, without charge. This we are enabled to do from the fact that, by preparing the case, we become familiar with its peculiarities. Our paper is read by not less than 75,000 persons every week, and has a wide-spread and substantial influence.

Inventors, we believe, will generally promote their own interests by confiding their patent business to our care.

Address MUNN & CO.,
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[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING OCTOBER 14, 1856.

Regulating the Draft of Steam Boilers—Pliny E. Chase, of Philadelphia, Pa.: I claim the apparatus substantially as described, when constructed and arranged so that the action of the steam in the boiler, B, when at or above the maximum pressure desired will cause the draft through the fire box, F, to be reversed, and pass down through the fire, and again resume its former course in the opposite direction when the pressure is reduced to the minimum, for the purpose specified.

Manure Distributor—J. W. Barnes, of Murreesboro', N. C.: I claim the hinged side, a', combined with the hinged bottom, as set forth.

Pump—William T. Barnes, of Buffalo, N. Y., and Jacob Barnes, of Oakville, Canada West: We claim, first, the employment of the priming reservoir, U, or its equivalent, which is connected to the pump, T, and fills it with water by the action of the pump, which water is held by the supporting box, V, or its equivalent, and can be discharged to prime the pump by pulling the cord, W, or its equivalent, for the uses described.

Second, we claim the combination of the levers, G G, with the piston rods, E E, and the connecting rods, H H, and rocking beam, K, in manner shown for the purposes set forth.

Grain Separators—Joel W. Cormack and Ferdinand C. Walker, of Quincy, Ill.: We claim the cylindrical cheat box into which the air tube enters, arranged as described, and for the purpose set forth.

We claim the flanges, i, and funnel, k, or their equivalent, in combination with the tube, C, for the purpose of creating the spiral or whirlwind blast in a grain separator, as described.

Axe Poles—David P. Estep, of Pittsburg, Pa.: I claim the manufacture of axe poles by compressing one half only of the axe pole at each operation between dies or swages of the shape described, projecting from the face of the rolls in which they are set, so that the axe pole can be inserted and withdrawn without coming in contact with the rolls, in combination with the use of the adjustable guide, g, either attached to the dies or separate therefrom, for the purpose of applying the pressure necessary to form the axe pole, in such a manner as to leave any excess or deficiency of iron in the head of the axe pole, thus securing exact uniformity in the two sides of the axe pole, and enabling axes of various size to be made from the same dies, by simply adjusting the distance of the rolls and the guage, substantially as described.

Harvesters—Carlos W. Glover, of Roxbury, Conn.: I claim attaching the finger bar, E, to the guide box, B, which is fitted over the flanch, b', of the driving wheel, A, as shown, the guide box having the two shafts, C D, attached to it, by which motion is communicated to the sickle from the driving wheel, and the bar, F, attached to the finger bar by hinges or joints, k, and the guide box, B, to the rod, H, the whole being arranged as shown, for the purpose set forth.

[This invention consists in a peculiar construction whereby the machine is greatly simplified, made to work with a light draft. All the parts which require to be adjusted are located within reach of the driver's seat.

Sticking Pins in Paper—Walker B. Bartram, of Waterbury, Conn.: I claim, first, the separator and spacer, composed of a series of bars, y y' y", etc., having a simultaneous movement at right angles, or nearly so, to the line of pins in the pin feeder, to the line in which the pins are inserted, and a movement one after the other in a direction parallel or nearly so to the said line, and operating substantially as and for the purpose set forth.

Second, the construction of the driver, L, with recesses in its face to receive the heads of the pins and act in conjunction with the paper after the points of the pins have penetrated it to serve the purpose of guiding the pins straight and parallel through the paper, thus enabling the holder to be opened to make room for the driver, substantially as described.

Third, the stop, Y, acting in combination with the separator and spacer, substantially as described, to retain the pins behind the separator and spacer after a number sufficient for one row has been taken from the feeder by the separator and spacer, but to be moved away by the separator and spacer

Fourth, the bar, Q, operating in combination with the forceps, o o, substantially as described, to form a second holder below the principal holder, P P*, and more perfectly secure the upright and parallel position of the pins during the commencement of the driving operation.

[It would be difficult to describe the above invention without engravings. It possesses several advantages over the pin-sticker machines in common use, among which may be mentioned the following; Owing to the peculiar manner of separating the pins and carrying them towards the devices by which they are placed in the paper, it is almost impossible to leave out a single pin from a row, while in the machines in common use, in which the pins are taken one at a time by the separator, so many pins are missed that much time is lost in supplying their place by hand. Second, the work is much more easy and simple for the person in charge of the machine, and a much greater amount of work is performed in a given time. Third, the pins are held more firmly in the paper, owing to the crease being held closed by forceps during the insertion of the pins through it, and afterwards slightly opened by the tension produced on the paper in drawing it through the machine, which causes the paper to bite upon the pins. Fourth, the sharp front edge of the crease produced by the forceps gives the paper a neater appearance. This improvement is an important and valuable one.]

Opening and Closing Farm Gates—Dennis E. Fenn, of Tallmadge, O.: I do not claim lifting the gate so as to unlatch it by the same movement or device, which causes it to swing open, as I am aware that such an arrangement is not new.

But I claim the cam, P, with its alternate elevation and depressions in combination with the arm, H, and double-jointed hinge, G I, arranged and operating substantially as described.

Firemen's Ladder—Domenico Giambustiani, of Washington, D. C.: I claim the combination of the folding foundation frame, e e', with the detachable single ladder sections, a a' b b' c c' d d', as above described, and for the purpose stated.

Pumps—Edwin T. Ligon, of Richmond, Va.: I do not claim a reciprocating piston working in a pump barrel, and provided with two valves, when said barrel is furnished with two on each side of the piston, and only one eduction pipe—my pump, as described, having two induction passages, and one eduction passage—each stroke or vibration of the piston, when the pump is elevating a liquid, causing such liquid to be drawn at once through both induction passages, and be discharged out of the central discharging chamber of the piston.

But I claim the combination and arrangement of the two induction passages or branches c d, by valve chamber D E, their four valves F F, G G, the receiving and delivering chambers g g, f, their four valve openings, i i i i, provided with a separate valve to each, or one vibrating plate, K, made to operate between them, substantially as specified; the piston being provided with an eduction opening or passage, and the whole being arranged and made to operate within a cylindrical case, A, essentially as specified.

I do not claim a valve made to operate in connection with two valve openings only, or so as to close them alternately.

But I claim combining and arranging four valve-openings, i i i i, with one vibrating plate, K, as described, so that it may vibrate between them, and opposite sides of it, and cover two of them, at the termination of each of its vibrations.

Escapement Movements for Automatic Fans—Don J. Mozart, of Xenia, Ohio: I claim in combination with sectional scape-wheels, D E, the banking-pin, M, meeting the sections thereof at each vibration, substantially in the manner and for the purposes set forth.

Hanging Reciprocating Saws—John H. More, of West Troy, N. Y.: I claim, first, the hinged-jaws, J J, and screws, e e e e.

Second, I claim the finished faces on the jaws, J' J', of the fixed body of the stirrup, in combination with the hinged-jaws, and for the purposes set forth.

Porte-Monnaies—John L. Mason, of Germantown, Pa.: I claim the construction of the whole of the pockets of a porte-monnaie, or other article of a similar character, from a single piece of leather, by a system of folding, substantially as described.

[The above invention is applicable to porte-monnaies or any other articles of similar character, which contain pockets. It consists in forming every portion of any number of pockets, from a single piece of leather, or other material, by a system of folding which gives greater strength and durability than the modes of construction generally adopted. The common mode is to form the sides and bottoms of the pockets of one piece, and the ends thereof of two other pieces. A saving of labor and material is effected by this improvement, and a better article produced.]

Sawing Stone—John North, of Middletown, Conn.: I claim sawing two inclined sides of a slab of marble or stone at one operation; the two inclined reciprocating saws, connected with one and the same rotating driving-shaft, by the oblique connecting-rods, c c', each rod having four joints, as set forth; the whole being arranged and operating in the manner and for the purposes set forth.

Adjustable Stirrup for Sawmill Pitmen—S. C. Norcross, of Dixfield, Me.: I do not claim the bolts, E, by which the stirrups and pitman are secured to the saw.

But I claim the manner of attaching the stirrup to the pitman, substantially as set forth, whereby its position on the pitman, and consequently the length of the pitman, may be varied, for the purpose of altering the position of the saw, with respect to the log.

Submarine Exploring Armors—Lodner D. Phillips, of Chicago, Ill.: I claim, first, a submarine armor with which the explorer can be wholly invested, composed entirely of metal, having free and easily moving jointed-limbs, and from within which the explorer may give motion to the armor and operate the external means as set forth.

Second, connecting with such armor a collapsible exterior vessel, so united with the interior air-chamber, as to allow of its being inflated, and buoy up the armor, as described.

Third, arranging the rods for operating the external tongs or nippers, within the tubular arms, as set forth.

Bending Metal Pipe—J. Perkins & W. H. Burnet, of Newark, N. J.: We claim the mandrel, substantially as described, with the traversing roller h, or its equivalent, for bending coils of metal pipe, and in combination therewith, the furnace, in the manner and for the purposes set forth.

Cylinders for Cotton Gins and Machine Cards—John L. Tuttle, of New-York City: I claim the manner described of making cylinders for cotton gins, or for carding or cleaning engines, viz., by introducing the fluid metal, which is to unite the teeth to the cylinder between the cylinders, a d, and through the openings e, into the space i, which unites the whole into one rigid mass, and avoids the danger of irregular flowing of the melted metal, as set forth.

Guides for Working Button Holes—Otis Avery, of Bethany, Pa.: I do not confine myself to the use of the spiral groove in the tube to give a rotary motion to the tweezers, as that motion may be given by making a twist or screw to the tweezers, or they may be revolved by the thumb while in the act of moving the tweezers back and forth to catch the thread.

I claim the combination of the sliding plate with the revolving tweezers, operating and arranged substantially in the manner and for the purpose set forth.

Canal Bridge—Balaam G. Anderson, of Chillicothe, O.: I claim constructing the bridge of three parts, B C C, the parts, C C, being connected by joints, F, to the part, B, and having their supports, D, provided with rollers, a, which work on curved ways, E, at the bottom of the canal, substantially as described, for the purpose set forth.

[The above consists in having the bridge made of three parts, one of which is permanent, and forms one half the bridge, and consequently extends half way across the canal. The other half of the bridge is divided lengthwise into two parts, which are connected by joints to the stationary part. The two parts last mentioned rest upon supports, which have rollers in their lower ends, said rollers working upon curved ways at the bottom of the canal. The two jointed parts of the bridge may be opened or thrown around when necessary, so as to allow boats to pass through and also close, so as to form a perfect and entire bridge at other times.]

Papering Pins—Lydia Atwood and C. O. Crosby, administrators of Charles Atwood, deceased, late of New York City: I claim fabricating a new article of manufacture, called diamond pin-cushions, by sticking pins in ranks or rows through a staple or U-shaped piece of paper, the heads of the pins projecting sufficiently far to allow the pins to be easily and conveniently withdrawn by the fingers for use. The pins being inserted upon two planes of the paper, with the heads projecting beyond the points a suitable distance to protect the points of the pins from being doubled or blunted, all the other portions of the pins being protected by the paper and sustained by it at a short distance from the heads and points by the paper making a solid mass of pins set in diamonds with regard to each other, but not in contact, and which usually contains the requisite quantity of pins for an ordinary paper for toilet use in a small compass, as specified and represented.

Excavators—James Bourbin, of San Francisco, Cal.: I claim the application of any number of shovels required, and working from one center on the circular principal, also the different appliances by which the shovels are directed in their different movements, as described.

Sticking Pins in Paper—Lydia Atwood & C. O. Crosby, administrators of Charles Atwood, dec'd., late of New York City: I claim the vibrating nippers, V, armed with a knife or double inclined plane for separating the pins, turning them from a vertical to horizontal position, as specified.

Second, I claim the straight inclined conductor, K, when combined with the nippers, V, with their separating points, as carrier, as described.

Third, I claim the lipped driver, K, for driving the pin along a railway or bed laterally into the groove to be stuck into the paper, when it acts upon the pin before the vibrating nipper lets go its hold.

Fourth, I claim the lateral driver or its equivalent, for the purpose of delivering the pin under the spring holder, y, as a means of controlling the pin until it is inserted into the paper.

Fifth, I claim the combination of the sticking driver, P, and its guiding groove with the vertical crimping bars, when the bars permit the paper to pass over their ends vertically in the process of sticking pins.

Sixth, I claim the feeding rollers, Y" z", or their equivalents, for the purpose of holding the paper and controlling it at such a distance from the guiding rollers, x' x' x", as will allow the paper to pass up and down without moving the spools while the rollers are in motion.

Seventh, I claim the rollers and carriages which control pins and the paper, for the purpose of moving the paper forward intermittently, and up and down intermittently, to space off the rows of pins, and to space the distance between each succeeding pin in the same row, the ends of the paper resting on spools, Y" z" dissected from the machine.

Uterine Supporters—William Provines, of Columbia, Missouri: I claim the combination of the ball and the valve apparatus, described in the manner and for the purposes set forth.

Bee Hives—Charles Pawling, of New Pittsburg, Ohio: I claim the arrangement of the bee entrances H H, with the moth entrances f f f, and moth receptacles E F G P, when located as set forth and described, and for the purpose stated.

Washing Machines—Jacob Purkey, of York, Pa.: I claim the reciprocating corrugated or fluted board or rubber C, in combination with the rollers, J; the rollers being attached to the chains, I I; the board or rubber, and rollers, being arranged and operating as shown and described, for the purpose specified.

[The foregoing improvement consists in the employment of a vertical wash-board, which moves up and down between a series of rollers. Said rollers are attached to chains which yield when the clothes are put in between the rollers and board.]

Applying Tan Liquor to Hides—Samuel W. Pingree, of Methuen, Mass.: I do not claim the separate use of any of the chemical materials mentioned, for the process of tanning, as I am aware that all of them have been before employed, and particularly, I do not claim the neutralization of the alkali, by the use of sulphuric acid, preparatory to the introduction of the hides into the tanning liquor.

But I claim the use of the catechu and the sumac, and alum, with reference to the application of the bark or strong tanning liquor, as stated, and so as to produce effects as set forth, and in the order as specified, when the hide is tanned with the hair on it.

Spring Bed Bottoms—Chas. Schroder, of New-York City: I claim the arrangement of springs laying horizontally, and connected together in the manner and for the purpose specified.

Wheelwrights' Machine—John Sitton, of Williamston, S.C.: I do not claim the several devices described separately: but I claim them when combined and operated as specified.

Finishing Caster Wheels—Philos B. Tyler, of Springfield, Mass.: It will be obvious to all mechanicians that stamping between dies the two surfaces of a piece of metal, is not new, and I lay no claim to such an operation, or to corrugating the disk of a wheel which is old; but the smoothing of the surface of a caster wheel or roller, on the plate or disk connecting the hub and rim, and condensing the metal in the operation, instead of removing it, has never before been done to my knowledge; its advantages are obvious—it prevents spoiling any of the castings by imperfect manipulation—it greatly strengthens the disk a, hardening it, and making it stiffer, and insures an equal thickness in all its parts, or a proportional thickness as desired; the disk can be smoothly finished and corrugated, as easily as if it were a plain surface, and the expedition and cheapness with which the operation is performed, greatly reduce the labor and cost of the manufacture of the article.

I do not claim the process of stamping or swaging, as they are well-known devices, and are used for various purposes, such as making rail-road wheels of wrought metal, and other articles.

But I claim finishing caster rollers, and like articles made of cast metal, by stamping them in dies, substantially in the manner and for the purposes described, whereby in finishing, the disk is hardened, and its thickness determined with exactness, insuring the maximum amount of strength with the smallest weight of metal.

Cotton Gins—John L. Tuttle, of New-York City: I am aware that a guard or shield, which might be termed a straight-edge, though not thin enough to pass under the seeds, has been used; but do not know that a roller, such as described, has ever been used in connection therewith, so as to completely keep back the seeds, which my invention does completely.

I do not claim the knocking-roller and straight-edge when used separately, with the toothed-cylinder, as they have been thus used.

But I claim the combined use of the straight-edge and roller, for stopping and returning the cotton seeds to the breast of the machine and allowing the fiber only to pass through, substantially as set forth.

Forming Hat Bodies—James S. Taylor, of Danbury, Conn.: I do not claim a perforated cone or exhaust, either of which are well-known devices used in machinery for forming fur hats; neither do I claim a picker to pick up or blow the fur on to the cone, as that is a well-known device used in machinery for picking fur, wool, or cotton. Neither do I claim moistening or wetting the hat preparatory to removing it from the cone.

But I claim the revolving feed-table, in combination with the picker cone and exhaust, operating in the manner and for the purpose set forth.

I do not claim the principle of wetting or moistening the hat when formed, on an exhausting cone, for that is a principle well-known; neither do I claim the combination of currents of air, and the currents of numerous jets of hot water, in the hardening or wetting process, as that is a combination found in D. Barnum's patent, July 1, 1851.

But I claim the combination of the revolving brush, arranged as described, with revolving perforated cone, for the purpose of moistening the fur as it is thrown upon the cone, substantially in the manner described.

Card Teeth for Machine Cases—John L. Tuttle, of New-York City: I am aware that R. Kitson, in his patent of Nov. 11, 1851, represents a tooth of soft iron and of small wire, with a cross-section resembling the cross-section of my card-teeth—this I do not claim.

But I claim the making of card-teeth by giving to steel wire, the form described, and substantially in the manner set forth, so that when set, and a surface ground on them, the same grinding shall form the sharp points thereon.

Nail Machines—Perry A. Wilbur, of New Castle, Pa.: I claim the arrangement of the cutting, griping, heading, and delivery apparatus, with regard to the nail-plate feeder, so that the whole may be operated from one cam shaft, substantially in the manner set forth.

Fastening for Gates—Smith Young, of Milton, N.Y.: I claim the employment of two pivoted spring catches on the post B, in combination with a stationary central stop, b, and two hand levers, F F', on the front edge of the gate, substantially as and for the purpose set forth.

[The above improvement is intended for gates which open in two directions, inward and outward. The invention consists in providing a fixed tongue on the front edge of the gate, and two spring catches on the post, against which the gate closes. Said catches are arranged at a short distance apart, so as to leave a space between them for the tongue, on the gate, to fit in and hold the gate, when closed.]

Cleaning Emery Wheels—Stephen A. Whipple, of Shaftsbury, Vt., and Heman Whipple, of Port Richmond, N. Y.: We are aware that rollers partially immersed in water or other fluid, have heretofore been used for a variety of purposes, therefore we do not claim the same.

But we claim the use of the roller D, revolving in contact with the water, and the superincumbent wheel F, substantially as and for the purpose set forth.

Felling Trees—Simon Ingersoll, of Greenpoint, N. Y.: (assignor to Farmers' and Mechanics' Manufacturing Co., of same place): I claim attaching the saw O, to the bar M, which is connected with the levers J J, L L, and bars K, I, as shown, the bar I, being connected with the spring R, the whole being arranged as described, for the purpose set forth.

[This invention is now on exhibition at the Great Fair of the American Institute, Crystal Palace. An engraving and full description will be found in our paper of 27th of September last, being No. 3 of present volume.]

Brace for Carriage Springs—Thomas Dutton, of Washington, D. C., (assignor to John R. Elvans, of same place): I claim the combination of the brace rod, with the toggle-joint and lever, or any of their equivalents, substantially in the manner, and for the purpose set forth.

Picture Cases—Alfred P. Critchlow, of Florence, Mass., (assignor to A. P. Critchlow & Co., of same place): I do not claim a hinge of common construction, or one having each of its leaves bent at a right angle, so that it may be inserted in a mortise made in the side of a case or box.

But I claim the application of a hinge of a daguerreotype or picture case, molded of a plastic material, or made of a frangible substance or substances; said hinge being made with each of its leaves bent twice, as set forth, and so applied to the halves of the box, that it may embrace two contiguous sides of such halves and be independent thereof, and extend or lap over and be fastened to the top and bottom plate of said box, substantially as described.

Chimney Cowl—Thomas W. Chatfield, of Utica, N.Y., I am aware that a patent was granted to Braer & Simonds, June 13, 1854, as also one patent to F. Emerson, July 3, 1847, as well as other patents and rejected applications: wherein the use of cones is described, which I do not claim.

But I claim the improvements I have made upon said patents and rejected applications, by the use of two inverted funnels B B, and D D, together with the short cylinder C C, arranged as described.

Salt Evaporators—James L. Humphrey, of Syracuse, N. Y.: I claim, first, the arrangement of the furnace, the closed evaporating vessel, the flues, D D, the blower, F, and the chimney, H, whereby the products of combustion are drawn through the evaporating vessel below the surface of the liquid to produce evaporation of heat, and afterwards driven in the opposite direction over the surface of the liquid to produce further evaporation and carry off the evaporation to the chimney, substantially as described.

Second, the scraper, K, fitted to the flues and pipes which pass through the liquid in the evaporating vessel, to operate substantially as set forth.

[The above improvement consists chiefly in an arrangement whereby the heated products of combustion from a furnace are drawn, by a blower, through flues passing through a closed evaporation vessel below the surface of brine, or other liquor, and by the same blower are forced back again, through the vessel, over the surface of the liquor, and into the chimney of the furnace. The heat from the furnace is thus used to effect evaporation both below and above the surface of the liquor, and the draft of the chimney is employed to carry off the evaporation. The improvement consists, further, in a scraper fitting to the flues below the surface of the liquor, and having a movement back and forth along the tubes, to remove the deposit which is caused to incrust itself upon them by crystalization, and which, if not removed, would prevent the heat being rapidly conducted to the liquor.]

Springs for Side Spar Wagons—M. G. Hubbard, of Penn Yan, N. Y.; I claim the mode described of combining the two semi-elliptic springs with the side spars of light wagons by bringing one above and the other below the end of said spar.

Anti-Friction Bushing for Ship's Blocks—Jas Kelly, of Sag Harbor, N. Y.: I claim the described mode of constructing the bush, by riveting the head within the cylinder, and the annular grooves, d d, for the reception of the bearing rings, E E, of the rollers, for the purposes specified.

Plows—Samuel A. Knox, of Worcester, Mass.: I do not claim the formula or rule, by which the form of the working surface of the mold board is determined or obtained, as I have only described such rule or formula as a mode of determining and defining the form which does constitute my invention, that it may be distinguished from all other forms of mold boards known prior to my invention.

I claim the form of the working surface of the mold board of plows, substantially such as described, and composed or combined of the several characteristic features specified.

Gimlet Handles—Guillaume H. Talbot, of Boston, Mass.: I do not confine myself to the particular arrangement or rag wheel gearing represented.

But I claim the application within the stock or handle of the gimlet, or other tool or instrument, of an arrangement of ratchet or rag wheel gearing, operating substantially as described, so as to enable the tool or instrument to be rotated in either direction, at the pleasure of the operator, by turning the handles back and forth in opposite directions, and at the same time pushing it from or pulling it towards him—the direction of the rotation being

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varied by the pushing or pulling of the stock or handle.

[The above invention consists in the application within the tool stock or handle, of such an arrangement of ratchet or rag-wheel gearing, as will enable the tool or instrument to be rotated in either direction at the pleasure of the operator, by turning the stock or handle back and forth, in opposite directions, and at the same time pushing it from or pulling it towards him. By pushing the handle from him the tool or instrument may be rotated in one direction, and by pulling it towards him may be rotated in the opposite direction. It forms a highly useful and convenient instrument.]

ARRANGEMENT OF THE THILLS OF VEHICLES—Noah Warlick, of Lafayette, Ala.: I claim the swinging frame composed of bars a, and b, and braces c, adapted to the reception of either thills or pole, substantially as and for the purposes specified.

RAILROAD CAR COUPLING—John C. Ward, of Charleston, S. C.: I make no claim to a tumbler where a partial rotation effects the coupling, when such rotation is produced by hand; neither do I claim the fastening produced by the rotation of either socket or link, and known as the "bayonet joint" fastening.

But I claim the weighted arm A, stud H, and slide-catch B, in combination with the partially rotating tumbler, when said tumbler constitutes the securing socket, constructed, arranged and operating substantially as described, for constituting a self-acting car-coupling.

RE-ISSUES.

ARTIFICIAL STONE—St. Jullien Ravenel, of Charleston, S. C. (Patented Aug. 12, 1856): I claim the composition of marl and slaked lime, substantially in the proportions specified, for producing an artificial stone, or a substitute for stone and bricks.

SELF-SEALING CANS—Robert Arthur, of Philadelphia, Pa. (Patented Jan. 2, 1855): I claim, first, a vessel made with a groove to surround its mouth, prepared with cement, and ready for hermetically sealing, but to hermetical sealing itself I make no claim.

Second, I claim the employment of elastic packing, arranged and retained by a groove of an acute form, or whose sides are in close proximity, in the manner and for the purpose described.

BORING MACHINE—Arcalous Wyckoff, of Elmira, N.Y. (assignee of Wyckoff & Morrison, of same place.)—Patented Sept. 25, 1855: I claim, first, the tubular or hollow auger or bits, D, as constructed, having the cutting lips of the bits approach the center, and yet separated from each other, boring without the use of a screw on the end of the bit, for the purpose of preventing the bit from following the grain of the wood.

Second, I claim the worm , operating on its own axle, and independent of the revolution of the auger or bits D, for the purpose of clearing away the chips, as set forth.

[This invention is now on exhibition at the great Fair of the American Institute, Crystal Palace, N. Y. We shall shortly illustrate it by an engraving from a working machine.]

DESIGNS.

STOVES—Hudson E. Bridge, of St. Louis, Mo.

Electro-Plating with Aluminum.

[Concluded from page 31.]

No. 7. *To plate with an alloy composed of Aluminum and Nickel.*—We form a bath of alumina according to the solution No. 3, and we attach a pole of nickel, with which we work the bath, supplying the alumina in solution from time to time. A strong battery power may be used for the baths of nickel, but they will work with various powers. Or we add to the bath of alumina a bag of the oxyd of nickel, which we prepare in the following manner:—

We dissolve nickel by nitro-muriatic acid, say one part muriatic and two parts nitric, and precipitate by ferro-cyanide of potassium; we then wash the oxyd, and it is ready to be placed in the bath. If this bath be used with a platinum pole, both the oxyds must be supplied from time to time; if with a nickel pole, the alumina alone must be supplied in solution. Or we take about 4 oz. of nickel, which we dissolve with nitric acid, and precipitate with carbonate of potassium; we then take the oxyd so produced, with about 4 lbs. of carbonate of ammonia, and 4 gallons of distilled water, to this we add about 1-4 lb. of the oxyd of alumina, prepared according to No. 3, boil in an iron vessel, filter the solution, and then it is ready for the bath, which we work with a nickel pole.

No. 8. *To plate with Aluminum and Copper.*—We dissolve alum in water, and precipitate either by carbonate of potassium or carbonate of ammonia; we then filter the alumina, then take the alumina and roast it upon an iron plate until dry; we then place about 4 lbs. of cyanide of potassium in an iron crucible, and completely melt it; we then add about 1 lb. of the dried alumina, and melt this with the cyanide; we then add (by degrees, so as to avoid too violent an ebullition,) about 1 lb. of carbonate of soda, and we fuse these three ingredients together about one minute, at a red heat; we then take about 1-2 lb. of the sulphurate of copper, which we add to the fused alumina, and again fuse it with copper, until both are melted, then turn it out on a slab; then place the compound in about four gallons of water, boil it, and filter it, and the solution is ready. This solution should produce a deposit of reddish purple, having the red color of copper influenced by the aluminum. This bath may be worked with a platinum or a copper pole. In the former case the bath must be replenished with the oxyds of both metals; in the latter case, with alumina in solution only.

No. 9. *To plate with Aluminum, Copper, and Zinc.*—We take half a pound of the sulphate of zinc, which we fuse with the alloy of alumina and copper, as described in No. 8, introducing the sulphate of zinc next, after the copper has been fused with the alumina, and we then proceed to complete the solution as in the foregoing. We then try the bath, to ascertain if there has been a change in the color from the former red color, produced by the bath of copper and alumina, to a color more resembling gold or brass. If it be not sufficiently changed to a yellow tint, which should be the effect of the sulphate of zinc, we add some oxyd of zinc and a further portion of cyanide of potassium. It is preferred to work this bath with a pole of brass, supplying alumina in solution from time to time; and we have found the same results from various powers of the battery.

No. 10. *To plate with an alloy of Aluminum, Silver, and Tin.*—The bath of alumina is made in the same manner as No. 4, with the exception of using 8 lbs. of cyanide of potassium in lieu of 4 lbs. We then take 8 oz. of metallic tin, dissolve it with nitro-muriatic acid, precipitate with salts of tartar, and dry the oxyd; we then melt the cyanide of potassium in an iron pot. We then fuse the alumina and carbonate of soda, as described in No. 4; then add the oxyds of silver and tin to the hot liquor, let it remain a few minutes, dissolve it in about four gallons of distilled water, boil the solution, filter it, and it is ready for the bath. This solution may be worked with a platinum pole, in which case the oxyds of all the metals must be supplied; or it may be worked with a pole of silver and tin, in which case the alumina alone must be supplied, and a moderate battery power should be employed.

No. 11. *To plate with Aluminum and Iron.*—We use a bath of alumina, prepared as before named; then take sulphate of iron and dissolve it with water, precipitate with salts of tartar, filter it, then take the oxyd of iron, and add to the solution of alumina, in the proportion of about 1 lb. of the oxyd of iron to 4 gallons of the solution of alumina; boil them together, filter, and the solution will be ready for use. This bath may be worked with a platinum pole, and the strength of the bath is sustained by adding the oxyd of aluminum and the oxyd of iron from time to time. If aluminum or the alloys of aluminum with other metals be required in a solid state, it or they may be deposited, as before described, on a metal which melts either at a higher or lower temperature than the aluminum, or the aluminum and its alloys, or upon a metal that is harder than the deposit, and the deposit can then be separated by heat or by scraping, and the aluminum or aluminum and its alloys, so obtained can be consolidated by processes already known.

The Steam Frigate San Jacinto.

MESSRS. EDITORS—In reading the first number of this volume of the SCIENTIFIC AMERICAN, we noticed the remarks about the *San Jacinto*, and believing that you have no wish to do us an injustice, we send you the following information:—The present machinery of the *San Jacinto* was completed by us in July, 1854, and up to the present time (propeller excepted) has given entire satisfaction. The first propeller was seriously injured (while at the Navy Yard here, previous to her trip to Europe) by being suddenly stopped, when making thirty-three revolutions per minute, by a large timber floating into the propeller well. As the injury was not visible, the ship sailed, and broke a blade when going to the Baltic. On docking the ship it was found to be the injured blade that was lost, and a previous fracture of considerable magnitude observed. The subsequent breaking of the second and third blades followed as a natural consequence the breaking of the first. The present reports of the breaking of the machinery are all untrue, and are based on the following circumstance:—After steaming to China, they left for Japan; just after leaving port a slight jar was observed in the propeller and on examining it, it was found that the key which held it on was becoming loose. As there was a dock in China where it could be secured and none in Japan, the engineer advised returning to port, and hence the various reports as to her breaking down, etc.

In sending you this information we have no desire to be ourselves known in print, but simply to give the facts of the case.

MERRICK & SONS,
By B. H. BARTOL.

Philadelphia, Oct. 11th, 1856.

[For the Scientific American.]

Growing the Chinese Sugar Cane.

MESSRS. EDITORS—As the Chinese Sugar Cane is attracting the attention of the community, and as it is likely to be of great value to the farmers of the United States, and as you have given us an article on this subject in No. 1, Vol. XI, of the SCIENTIFIC AMERICAN, I thought I would write down and send you the result of my own experience in the growth of this plant.

Some time during the last winter I obtained about three hundred seeds of the "Sorgho Sucre" from the Patent Office, which I planted on the 1st of May last, on land that had been cleared three years ago. I laid the field off in checks three feet apart for corn. In some of these hills I planted the seeds of this sugar cane, dropping eight seeds in a hill, making thirty-seven hills in all. I worked the cane precisely as I did the corn, giving it three plowings and three hoeings. In four months from the time the seed was planted the cane was fully matured. It then measured ten feet six inches high, and one inch and three-eighths in diameter at the butt end. The joints average twelve in number to the cane, measuring from six to eleven inches long, the shortest at the bottom and the longest at the top. As soon as the seed was ripe, another head of seed put up out of the second joint from the top, and in a short time grew as high as the original head, though not quite so large. By the time the seed on this head began to turn dark a third head sprung up from the third joint, which was about the size of the last head, and now a fourth head is making its appearance from the fourth joint. Where this shooting forth of new heads would end, if no frost should come to kill it, I cannot tell. The roots, where I cut off some of the canes some time ago, are sending up new sprouts, some of which are four inches high. I am of the opinion the Sorgha Sucre is a perennial plant, and would grow all the time if there were no severe cold to kill it. It appears to surpass anything we can plant in producing fodder for cattle. There are commonly twelve leaves on a cane, and these measure, on an average, three feet long, and three inches and a half broad. We commonly plant two stalks of corn in a hill. I had eight canes in the same space, each cane producing full as much fodder as one stalk of corn. At this rate, which is to me matter of fact, one acre of cane will produce as much fodder as four acres of corn. But I am persuaded that I might have planted the cane in drills of three feet apart, dropping eight seeds in every space of eighteen inches, and by this means have eight times as much fodder as corn would produce.

One head of seed that I picked up at random measured three gills, and one gill contained eight hundred seeds. I then selected a large head, and measured it, and found it to contain four and a half gills of seed. The 37 hills that I planted produced three pecks of seed, this, after drying it two days in the sun, weighed 32 pounds. I had no mill to squeeze the cane, in order to make experiments in syrup and sugar. I made a little roller, which I thought might press out some of the sap, but it was a failure, for want of sufficient power. It flattened the cane, but did not press out the sap, of which the cane appeared to be full. I twisted a joint in my hands after being flattened with the roller, and obtained about half a gill of sap, which was as sweet as any of the sap of the sugar cane of the south. I intend, Providence permitting, to plant at least half an acre next spring, and procure a proper mill and boilers, and make a thorough experiment.

JOS. MCKEE.

Juno, Lumpkin Co., Ga., Sep 1856.

[For the Scientific American.]

The Action of the Galvanic Battery.

In S. B. Smith's answer, on page 19, SCIENTIFIC AMERICAN, to M. Vergnes, I was surprised to see him attempting to prove his theory of the electric current taking the surface of fluids in preference to descending into them, by stating the well-known fact of the positive pole in solution being more rapidly dissolved at the top than at the bottom, when in reality this action arises from a totally different cause. It is well known to chemists that all metallic solutions, if allowed to stand, become more dense as you descend below the surface, from the fact that the heavier portions of the fluid settle to the bottom until the lowest stratum becomes nearly or quite saturated with the metallic salt, and finally crystalizes on the bottom of the vessel, while the top of the fluid is comparatively free of metal. If a solution of cyanide of silver and potassium be set aside for twenty-four hours, it will be found, upon examination with the proper instrument, to contain 50 per cent. more silver at the bottom than at the upper stratum of fluid. If any person will examine a negative plate in a battery after an action of a few days, he will find the silver deposited two or three times heavier at the lowest extremity than at the upper. Now the reason why the positive pole is more rapidly dissolved at the upper part is this: The solution being nearly saturated with metallic acid at the lower portion, there is little or no free solvent to attack the positive plate at that point, while, on the contrary, at the upper part of the liquid there is a large quantity of free cyanide ready to take up the metal when the action begins. In the process of precipitation, the lower part of the liquid, instead of supplying itself from its own part of the positive plate, is actually being fed from the top, and by a close examination the two currents can be distinctly seen with the naked eye, the one saturated and slowly descending from the positive pole, and the other having deposited its burthen of metal, rapidly rising to the top to again receive its load of precious metal, thus producing a continual circuit, as long as the action goes on. This inequality of density in metallic solutions is more distinctly seen in a sulphate of copper solution than any other. If the positive plate be set flat down at the bottom of the solution, and the negative at the top, and left in action a few hours, it will be found that the top of the liquid is entirely robbed of metal, while the bottom is so completely saturated that large crystals are forming upon the positive pole, and entirely obstructing the electric current—crystalized metallic salts being non-conductors.

JAMES POWELL.

Cincinnati, O., Sept. 30, 1856.

[We have also received a letter from Geo. H. Guild, of Lexington, Ky., on this subject, confirming the statements of Mr. Powell. He says:—

"Having had several years' experience in the silver plating business, I believe the plate is decomposed according to its density, and in no case yet, where I used a plate of uniform density, have I found it more decomposed at the top than at any other point of its contact with the solution, Mr. Smith's assertion to the contrary notwithstanding. I have specimens with the center entirely gone, others with the lower corners and edges gone. Mr. Smith scouts the idea of the irradiation of electricity being governed by the same laws as those of light and heat. If there is no irradiation to electricity, how is it that an object subjected to the silver plating process is plated with a uniform coat at the lower extremities, as well as at the surface without regard to the size of the silver plate immersed?"

Stove Polish.

As the period has arrived for the polishing up of stoves for winter use, we have a good word to say in favor of the polish prepared this year by Quarterman & Son, No. 114 John street, this city. Excellent though their former polish has always been, they have made a decided improvement on it this year; it far surpasses anything of the kind we have hitherto tried.

The steamship *City of Savannah*, sprung a leak on the 12th inst., off Cape Hatteras, and soon sunk; officers and crew were all saved.

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New Inventions.

New Mill Stone Dress.

Mr. W. P. Colemen, of New Orleans, La., has lately patented a mill stone dress, the furrows of which are arranged in a peculiar way, whereby the grain is retained between the grinding surfaces of the stones a requisite length of time, and the surfaces of stones at all times supplied with a proper quantity of grain. The surfaces of the two stones are thus prevented from coming in contact with each other, a much larger amount of grain can be ground, while the quality of the flour will be improved. It is an important and valuable invention.

New Mode of Bending Wood.

Messrs. E., A., & C. Kilburn, of Burlington, Vt., have lately patented a method of bending ship's knees, and which consists in forcing the stuff endwise into a close sided mold, having the desired curved form longitudinal, and having its interval transverse section only just of the dimensions of the transverse section of the piece of wood. The wood is thus confined laterally, in all directions, during the bending process, and is thereby prevented from breaking, splitting, or splintering.

The Great Bridge at Montreal.

This immense structure forming part of the Great Trunk Railroad of Canada, has been pushed forward with considerable energy this summer by A. M. Ross, the resident engineer; but even with the greatest efforts, it is believed that it cannot be completed within two years. And when its gigantic proportions are taken into consideration this will excite no wonder. The mason work alone will amount to 28,000,000 cubic feet, and the iron tubing will weigh 11,000 tuns. When completed it will be the greatest bridge in the world.

New Marble Sawing Machine.

Our engraving illustrates a novel machine for sawing marble blocks, by C. A. Schultz, of Chicago, Ill., which is now on exhibition and in operation at the American Institute Fair, Crystal Palace, N. Y. It is the only operating machine of the kind exhibited.

The principal feature of novelty consists in the employment of endless saws, A, which are strained around the pulleys, B, like endless belts. The pulleys are made of such a diameter that the saw blades will not bend in passing around them, but simply spring, so that no injury to the saws takes place, no matter how rapidly the pulleys move.

The pulleys and saws are carried in a frame, C C′, which has a vertical movement within the main frame of the machine, D. Motion is given to the pulleys, B, and saws, A, by means of power applied to shaft E, which causes the vertical shaft, F, to rotate. G is a pinion on shaft F, which drives the pulley pinions, B′. Pinion G revolves with shaft, F, and also rises and falls upon it.

In order to introduce the block of marble the frame, C, with the saws, A, pulleys, B, pinions, B′ and G, are raised vertically by turning the crank, H. This operates shaft, I, and winds up the lifting cords, J, which are attached to the four corners of frame C. The block of marble having been placed in position, frame C is allowed to descend, and the saws are brought upon the top of the block of marble. The weight of frame C then serves to give the required downward feed to the saws.

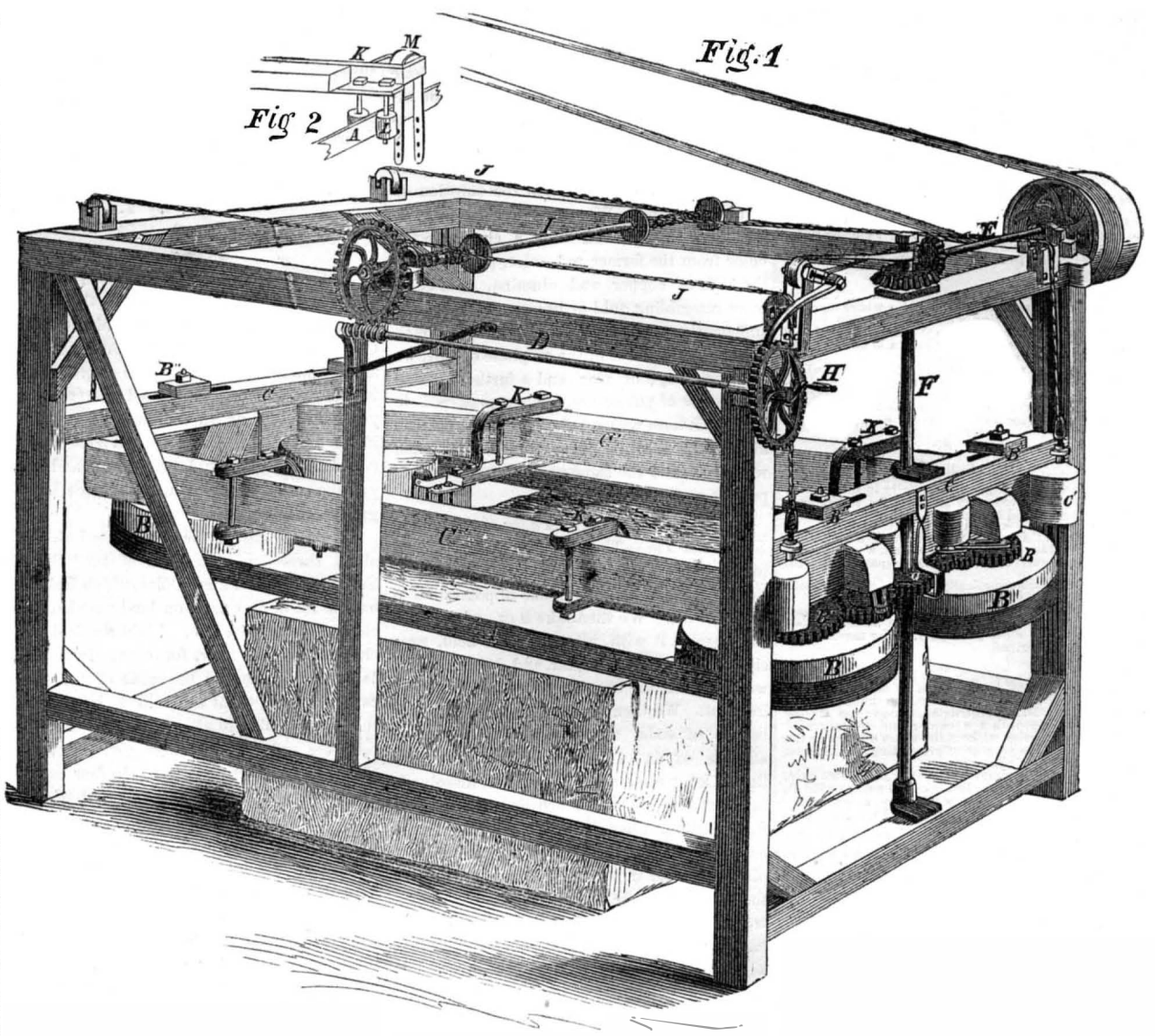
The saws are readily set to cut at an angle, and thus produce tapering blocks for monuments, by altering the position of the frames, C. Said frames are so arranged as to be near together, or moved apart, at pleasure, by means of set screws, B″. The frame, C′, is divided into two parts, each portion carrying a saw, and being separately adjustable. Adjustable guides, K, are also attached to frame C′, for the purpose of guiding the saw. Guides K are furnished with friction rollers, L M, between and beneath which the saw passes (see fig. 2.) Each saw makes two cuts, which are perfectly true and smooth.

The saws are made of common hoop iron, and therefore cost but very little. We are told that this machine cuts about three times faster than the common marble sawing apparatuses. The endless saws may be driven at a high speed, their motion is always steady, and there is no appreciable wear on their surface. No difficulty is experienced in feeding in the sand.

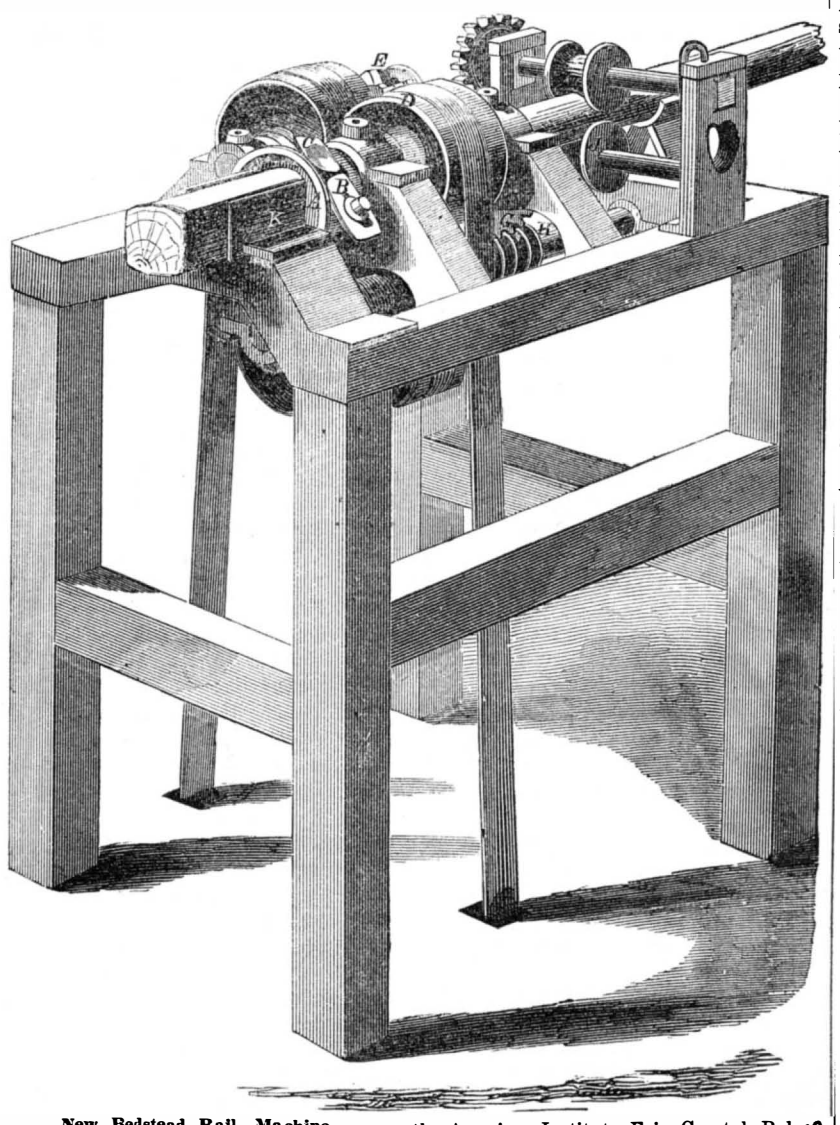
The machine at the Palace is of full size, and operates with entire success. Further information can be had at the Palace or by addressing Fulton, Perkins & Co., box 698, Chicago, Ill. Patented March 18, 1856.

NEW MACHINE FOR SAWING MARBLE.

Fig. 1



MACHINE FOR TURNING BEDSTEAD RAILS.



New Bedstead Rail Machine.

Our engraving illustrates a machine for turning Bedstead Rails, now on exhibition at the American Institute Fair, Crystal Palace N. Y. It is the invention of T. R. Bailey Lockport, N. Y. Patented July 25th, 1854.

This machine is intended for the turning of plain round rails for the cheaper kind of bedsteads, and also for all kinds of plain round turning, such as posts, window curtain rollers, pickets, rake bows, &c.

In our cut, A is a revolving mandrel, made hollow. B C the cutters. The rough rail is turned by being passed through the mandrel. At the entrance or mouth of the mandrel there is a stationary guide plate, K, through which the stuff passes. The rail is fed in by hand for a short distance, or until its forward end comes between the rollers, I J; these rollers then seize the stuff and carry it through, without assistance from the operator. E is another revolving hollow mandrel for cutting tenons on the ends of the rails, for screw bedsteads. The tenon produced is of the usual shape. Both of the mandrels are driven by one belt D. The machine is strong, durable, very simple, easily managed, and not liable to get out of order. It works with great rapidity. being capable of turning out 600 to 800 bedstead rails per day of ten hours. Price $150. For further information apply at the Palace, or address the inventor as above.

The propeller *Falcon* was burned at Chicago on the 17th inst.

SPLENDID PRIZES.—PAID IN CASH.

The Proprietors of the Scientific American will pay, in *Cash*, the following splendid Prizes for the largest Lists of Subscribers sent in between the present time and the first of January, 1857, to wit

For the largest List,	$200
For the 2nd largest List,	175
For the 3rd largest List,	150
For the 4th largest List,	125
For the 5th largest List,	100
For the 6th largest List,	75
For the 7th largest List,	50
For the 8th largest List,	40
For the 9th largest List,	30
For the 10th largest List,	25
For the 11th largest List,	20
For the 12th largest List,	10

Names can be sent in at different times and from different Post Offices. The cash will be paid to the order of the successful competitor, immediately after the 1st of January, 1857.

☞ See Prospectus on last page.

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Scientific American.

NEW YORK, OCTOBER, 25, 1856.

Failure of the Steam and Ether Engines.

Many of our readers will remember the flattering accounts that were published in various papers, respecting the wonderful success of the combined steam and ether engines of M. Du Tremblay, of Paris; and how their application to some steamers engaged in the Mediterranean trade had, by their superior economy of fuel, enabled their proprietors to pay a dividend of forty per cent. in January 1855. A correspondent at Marseilles, in a letter to us, on page 251, Vol. 11 SCIENTIFIC AMERICAN, corrected some of the extravagant stories then in circulation, yet he also stated that the combined ether engines were a success,—that they saved 60 per cent. of power with the same fuel,—that they had been applied to several steamers, and that four more were then in the course of construction. We had expressed the opinion that we could not see how such a gain of power, and such profits, could be realized, and stated, in our remarks at the end of that correspondent's letter, that, taking all things into consideration, simple steam engines were preferable.

We learn by the last number of the *London Artizan*, that two of these steamers—*Le Jacquard* and *l'Arago*—belonging to the Franco American Company, were lately taken to one of the Graving Docks, at Southampton, for repairs, and were objects of curiosity to English engineers. The combined engines, were well made, and the whole machinery unexceptionable in construction, but *Le Jacquard*, which was first afloat, used the ether cylinders only during three or four voyages between Marseilles, and the Crimea, then gave them up, and used the steam alone; while *l'Arago*, which was launched afterwards, never used its ether cylinders at all. Thus the ether engines are a dead loss,—entirely useless, while the simple steam engines alone are now used to propel these vessels.

It is stated that the cause of the failure of ether engines arose from the difficulty in keeping the ether vapor from escaping through the stuffing boxes. The loss is stated to have been about thirty-eight and a half gallons of ether daily, valued at ninety dollars,—a loss far too great to be compensated by the reputed economy of fuel, and no wonder it was abandoned.

It is, however, still asserted that the ether cylinders economised about 60 per cent. of the power, and that, were it not for the loss by the escape of vapor, they would effect a great saving; these views are presented by a correspondent of the *Artizan*. We believe that, although there was not a particle of loss by the escape of the ether in such engines, the simple steam engine is still preferable. The economy of power said to be effected in *Le Jacquard* when the ether engines were used, is based upon the work now executed by the steam engines on board that vessel. This is not a fair comparison, for the steam cylinders employed were designed to work steam of 35 lbs. pressure, to be exhausted at the end of the stroke into the ether vaporizers; they are consequently too small to work the same amount of steam alone, to advantage. If the small steam cylinders of 64 inch bore were taken out and new ones of 80 inches bore put in, and the steam cut-off at half stroke, they would be found to work as economically with respect to a saving of fuel, as the ether and steam cylinders combined. When it is taken into consideration that beside a steam engine in each vessel, there was an ether vaporizer, resembling a large flat tubular condenser, and two ether cylinders, with all their connections, valves, and rods, the great loss sustained by this company in adopting them—now that they are abandoned—may be conjectured.

Mexican Emigration.

Since the appearance of our article on the Colonization of Mexico, we have had several letters of inquiry from young men, as to the propriety of emigrating to that country. Such letters should not be addressed to us, as we are unable to answer them. Our notice was based upon a pamphlet issued by a Mexican official, who has quite recently returned to his own country.

Bitumen—Its Uses.

This is a name employed to denote various inflammable substances found in the earth. There are a number of different kinds of it, most of which pass into one or other, from petroleum—the most fluid—to asphalt, which is sometimes too hard to be scratched with the finger nail. Extensive magazines of it are found in various parts of the world. "Elastic bitumen" is of a brown color, and erases pencil marks like india rubber, hence it is called mineral caoutchouc. "Compact bitumen," or asphalt, is extensively disseminated, and is found in great abundance in some of the West India Islands, and New Brunswick, N. A. It is black, and of a hard resinous appearance. The Pitch Lake of Trinidad yields bitumen in all conditions. Petroleum is fluid bitumen; it is of a dark color, and oozes from certain rocks and crevices in the earth, and becomes solid by exposure to the atmosphere. Naphtha, or mineral oil is another variety of it, which becomes petroleum by exposure to the air. Petroleum is common in various parts of the United States, such as at Kenawha, Va., Scottsville, Ky., Oil Creek, Pa., Liverpool, O., Hinsdale, N. Y., and it was at one time collected by the Seneca Indians and sold in the market as a lotion for rheumatic affections and bruizes. It is in the form of petroleum that bitumen is most common in our country, and but very little use is made of it, owing, we suppose, to its pungent smell. In Burmah it is used for fuel and illumination; and mixed with soap, is said to form an excellent remedy for many cutaneous diseases, a protective against the prickly-heat of warm countries: and was supposed, at one time, to be a remedy against cholera.

It is a remarkable fact in the history of the useful arts, that asphalt, which was once so generally employed as a durable cement, should have almost fallen into disuse for thousands of years. It resists the passage of air and moisture, and has therefore a most valuable quality for lining cisterns and the interior of deep cellars. Bricks or stones coated with hot bitumen resist moisture, and are rendered proof against decay by changes of weather. Possessing these valuable characteristics, it is wonderful that it is so little used. Some attempts have been made in this city to make a concrete pavement of it, such as at the building on the corner of Beekman and Cliff streets, but for this purpose it is evidently not equal to stone flags, because it has had to be relaid, and now huge cracks are again seen in different parts of it. On the other hand some beautiful mosaic asphalt pavement, has been laid down in the streets of Paris, and is said to be perfectly successful. All the volatile oil and water should be expelled from bitumen by boiling before it is applied as a cement, or it will not resist the changes of heat and cold well. Many failures in the employment of pitch and bitumen for cement have been caused by neglecting to boil it thoroughly. It is our opinion that iron pipes, coated inside and out with hot bitumen, especially the elastic kind, will prevent incrustation inside, and render them very durable. And may not this substance be so manipulated, that it can become a substitute for india rubber and gutta percha? These vegetable resin gums are becoming dearer year after year, and are only obtained in limited quantities and at considerable expense. On the other hand bitumen is found in exhaustless quantities, and is very cheap. Can it not, by some chemical process, be rendered as elastic as these gum resins, and as capable of vulcanization. Here is a field, we think, of great extent for chemical experiment, to which we invite attention.

Commissioner's Report for 1855.

We are indebted to the Hon. Chas. Mason, Commissioner of Patents for copies of his Annual Report for 1855. The work is published in two volumes of equal size, and contains the claims of all patents granted for that year, together with outline diagrams of their prominent features of novelty. The general plan and arrangement of the Report is excellent and the execution good.

Great Exhibition of the American Institute at the Crystal Palace, New York.

FIFTH WEEK.

The Fair continues to attract thousands of visitors from all parts of the country. The day fixed for the closing was October 25, but we presume the time will be extended until the public attendance materially diminishes.

During the past week the Annual Cattle Show of the American Institute has taken place, the locality selected being Hamilton Square, a large open lot in the upper part of the city. The New York *Tribune* intimates that the award of prizes was influenced by bribery. The judges give a list of the successful competitors; but no statement of the reasons for their decisions is made public. This Cattle Show appears to have been attended with no special result.

We continue our usual reports of the novelties on exhibition. Besides those annexed, it will be observed that our illustrations this week, are nearly all taken from objects at the Palace. Another noticeable fact is, that nearly all of the most prominent objects, in the mechanical line, in the Exhibition, have been illustrated and described in the SCIENTIFIC AMERICAN.

Printed Muslins.

The Dunnell Manufacturing Company at Providence, R. I., exhibits a case of well-executed calicoes, and the Manchester (N. H.) Print Works display a case of fine muslin de laines and calicoes; but the Pacific Mills, Lawrence, Mass., make the greatest show of printed goods. Fine lawn muslins, manufactured at the Portsmouth Steam Mills pleased us both on account of the quality of goods, and the elegance of their design; the checked organdis, calicoes, and delaines exbibited by this company give evidence of good taste and the variety of work they execute. There is no branch of art connected with manufactures, which embrace more varied skill, knowledge, and taste, than calico printing. The bleaching, dying, and color-making departments, demand great chemical experience; the patterns require great taste in designing, and skill in engraving, and the machinery for executing the various kinds of work, is complex and ingenious. It affords us pleasure to be able to pay a compliment to the printed goods displayed at this Fair. They undoubtedly show a great improvement in design and coloring in comparison with the flashy vulgar daubs that were fashionable a few years since. It is our opinion, that the public taste has not been improved by the abundance of coarse mixed goods, half cotton half wool, now so common; a finer quality of fabric, all cotton, is not only more beautiful, but more durable. The superior qualities of calicoes, manufactured in France, Belgium, and England, are beautiful fabrics; we wish that some of our manufacturing and printing companies would pluck up spirit enough to produce as good fine calicoes as the foreign, before the expiration of another year.

Spring Beds.

Messrs. Lippencott & Co., 1180 Broadway, N. Y., exhibit Wright's Patent Sectional Spring Bed. The elasticity is obtained by the employment of a series of spiral springs, composed of strong wire, each spring having a round seat and a head of wood. These springs form a cheap, durable, and comfortable bed. For engraving and description see SCIENTIFIC AMERICAN, Vol. 11, page 340.

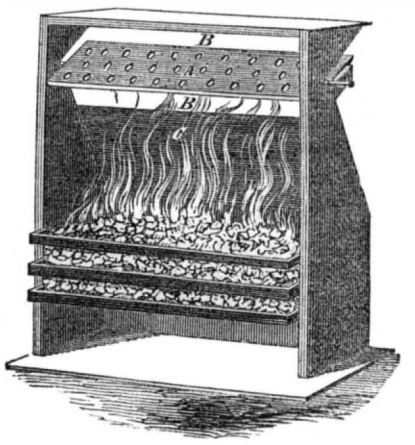
Wagstaff & Co., 499 Broadway, exhibit specimens of Howe's patent spring beds. The springs are single boards, shaped somewhat like one half of an elliptical carriage spring. They are stretched across the bedstead. Cheap and simple.

Steel Pens.

The great seat of the steel pen manufacture is Birmingham, Eng.; there the art originated, and there it is still carried on to an immense extent. This peculiar manufacture, after repeated efforts, may be said to have attained to success among us. The American Steel Pen Manufacturing Co., of New York, exhibits a case of excellent pens in the South Gallery. Each pen has a stamped medalion likeness of Washington on it, for which a patent was obtained, as a design, on the 15th of April last. We have tried these pens, and can give them a good recommendation; still, we have used some English pens which were better. Our steel pen manufacturers will, no doubt, soon produce pens unsurpassed, if not superior to the best Gillott.

Grate Damper.

Messrs. Jacob Cohen & Co., exhibit in practical operation, one of their improved grate dampers, illustrated in the annexed cut.



A is the damper, which, it will be seen, swings on pivots, and is perforated with a number of small holes. With the exception of the damper, the grate is constructed in the ordinary manner. In lighting the fire, when a strong draft is necessary, the damper A is opened. But after the fire begins to burn well, the damper is turned so as to close the openings into the chimney, B, and present a reflecting surface to the caloric, of similar angle to the back piece, C. When closed, the damper, A, throws out all the heat of the fire into the apartment, but the gaseous products of combustion are drawn off through the perforations, and pass up the chimney.—We are told that this damper effects a saving of fifty per cent. in fuel, and gives the highest satisfaction wherever used.—Price $3 and upward, according to size. Further information can be had at 407 Broad way, N. Y., or at the Palace.

Improved Grooving Plane.

Mr. John P. Robinson, of Matteawan, Dutchess Co. N. Y., exhibits his patent Grooving Plane, which is shown by the accompanying engraving.

Fig. 1

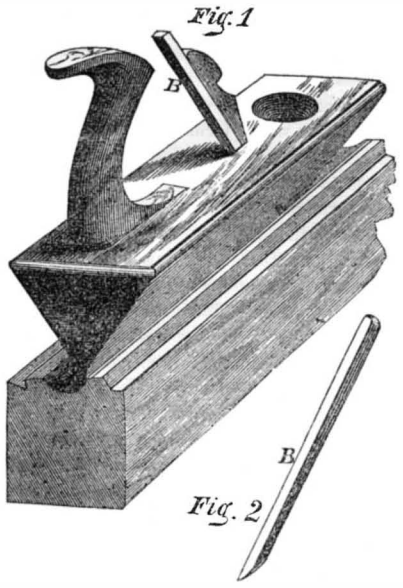


Fig. 2

The plane stock, A, it will be seen, is made of triangular shape, and the cutting tool, B, which is quite narrow, projects at the apex of the angle. The plane is moved like the ordinary tool.

Every variety of groove, square, angular, or round, of the same dimensions or tapering in form at the pleasure of the workman, can be cut, with the utmost facility and rapidity. No circle is required to be struck, and a saving of 50 per cent. in time is gained. The plane is chiefly intended for the use of pattern makers in working out core boxes. It is in use in the pattern shops of the Novelty Works, in this city, at Starbuck's, Troy, &c., where it gives the highest satisfaction. Price $2·50. For further information address the inventor as above. Patented Dec. 18th, 1855.

Woolen Cloths.

Marked improvements have been made in h e manufacture of woolen cloths during the past few years: even the satinets are more ike broadcloth than those so common a few

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years ago. Wales & Co., of Wales, Mass., and Messrs. Hilliard & Spencer, of Manchester, Conn., exhibit some pieces of fine satinets. The color and finish of all these goods are excellent.

Cassimeres appear to be the most common woolen cloths at the Fair; the Middlesex Co. Lowell, Mass., exhibit a number of pieces; the Powhattan Co., Moosup, Conn., make a large display of ribbed and plain cassimeres.

A. Morse, of Eaton, Madison Co., N. Y., exposes some beautiful black doeskin; the Bay State Mills, Mass., display some excellent beaver cloth, and the American Mills, Rockville, Conn., exhibit a few pieces of double-fold fancy cassimere, of very good quality.

It requires a large capital to conduct the manufacture of woolen cloth on the most approved principles, to produce fine goods.—Fresh wool does not work freely, therefore wealthy manufacturers have always a large stock ahead, so that it can attain a proper age before they commence to work it. Age—a few months, at least—imparts to it, by some cause not very well understood, a superior working quality, which gives an advantage to companies who can lay up a large stock. A great desire to produce cheap goods with a good surface has led woolen manufacturers to use too much cotton in their warps. They display much skill, we admit, in covering it up with the wool; but such goods after a little wear, become bare, and fade in color, and they do not possess that soft and agreeable feeling to the touch that belongs to goods made entirely of wool. We have seen statements in some of our daily papers to the effect that American wool was not sufficiently fine for the manufacture of the finest kinds of woolen cloth. This is an error. As fine qualities of wool are now raised in the United States as can be found anywhere. We only wish that there was more of it. According to the capacities of our country for sheep-grazing, not a tithe of wool is raised that might be.

Pianofortes and Melodeons.

Messrs. R. G. Nellis & Co., 547 Broadway, N. Y., exhibit one of Speer and Marx's patent (1852) Culindron, or Cylindrical Pianofortes, which presents a very beautiful and ornamental appearance. It occupies a prominent position in the central part of the Palace, and is the "observed of all observers." The principal feature of novelty consists in having the strings arranged around an upright hollow cylinder, which forms the sounding-board. It is alleged that a cylindrical sounding-board acts on the principle of a drum, and gives a certain roundness, fullness, and richness of note which the ordinary instruments do not possess. Another advantage is that two pianos may be combined in one, with but little increase of space. Thus the instrument at the Palace has two key-boards, and is, in fact, a double piano. It is elegantly finished and makes a fine display. The position in which it is placed, however, is very bad for sound, and the merits of the invention are, therefore, not so fully apparent as they otherwise would be. Mr. R. G. Nellis uses, in connection with the instrument, a recently-patented contrivance relating to the working parts. For an engraving and full description of the Culindron see Scientific American, Vol. 8, page 73.

William Miller, 158 East 21st st., New York, exhibits several improved pianos, the novelty consisting in stringing some of the lower or bass octaves over the center of the sounding-board. The wires for these octaves extend the whole length of the piano. It is claimed that instruments thus made have a certain richness and fullness of sound that other pianos do not possess.

Messrs. Chickering & Co., Boston, Mass., exhibit a magnificent grand piano, and several others, large and small, which evince the most careful and excellent workmanship

Henry Hanson, 100 Center st.. New York, exhibits a new diagonal scale piano.

William Compton, 103 East 40th st., exhibits a patent arch-shape rest, plank plate, and, reversible bridge piano.

Anthony Kuhn, Baltimore, Md., exhibits a grand patent Harp Dulciana piano. It is a beautiful object. A large and splendid harp crowns the upper part of the instrument, whose strings, when the keys are played, send out delicious sounds.

Among other fine specimens of pianos and melodeons we notice those exhibited by T. Gilbert & Co., Boston, Mass., Taylor & Farley, Worcester, Mass., Earnest Gabler, N. Y., Grovesteen & Truslow, N. Y., Horace Waters, N. Y., Schultz & Ludoloff, N. Y., Steinway & Sons, N. Y., Theodore Roz, N. Y.

Broadcast Seed Sowers.

H. Willard, of Vergennes, Vt., exhibits some of his lately patented seed sowers, which present a novel and practical appearance, and attract considerable attention among agricultural visitors. The machine consists of a two wheeled vehicle, which carries two small revolving seed cylinders, which scatter the seed upon an inclined board, whence it falls to the ground. The inclined board is furnished with certain upright slats or guides, which insure an even scattering of the seed upon the ground, no matter whether the surface is level or hilly. A rotary harrow is attached behind, which covers the seed as fast as scattered. The seed falls only between the wheels of the vehicle, so that the operator is never in doubt as to where the grain is spread. The machine can be readily adjusted to sow in hills or in drills, The driver rides upon a convenient seat. Several other important advantages are secured which our limited space prevents us from naming. For engraving and description see Scientific American, Vol. 11, page 361.

Wm. S. Sampson, of Boston, Mass., exhibits a broadcast sowing machine. It is in the shape of a hand-cart, and it is said will sow forty acres per day, at an expense of 3 cents per acre.

Hay and Cotton Presses.

C. J. Fay, of North Lincoln, Me., exhibits a full sized hay and cotton press, which is very strong, durable, and simple. Price $100. For engraving and full description see Scientific American, Vol. XI., page 249.

G. D. Harris, of Fitchburgh, Mass., exhibits one of Ruggles' Patent Combined Cotton and Hay Press and Stump Puller. By a very simple and compact arrangement of a lever frame and gearing, a tremendous power is exerted upon the substance pressed. Or the press may be quickly disconnected, and the machine used as a stump puller, or for moving buildings, raising burdens, etc. Price $100 and up. For an engraving and full description see Scientific American, Vol. XII, page 5.

Farmers and Mechanics Manufacturing Co., of Greenpoint, L. I., exhibit Ingersoll's patent Hay and Cotton Press, which possesses the merit of cheapness, compactness, simplicity, strength, durability, ease, and rapidity of operation. Price $50. See engraving and description in Scientific American, Vol. 11, page 233.

W. Deering & Co., Albany, N. Y., exhibit Dederick's Patent Parallel Lever, Cotton, and Hay Press. It is claimed for this machine that the follower can never cant or bind against the sides of the press. It operates with great power and speed. Two men and a boy, it is alleged, can bale from five to nine tuns of hay per day. Price $100 and up. See engraving and description in the Scientific American, Vol. 11, page 384.

James A. Disbrow, of Poughkeepsie, N. Y., exhibits a new press, which will be found fully illustrated and described in the present number of our paper.

Cow Milking Contrivance.

John W. Kingman, of Dover, N. H., exhibits an air-tight milk pail, from which the air is exhausted by means of a small lever or pump handle. Four flexible tubes, each having a rubber pocket at its extremity, receive and clasp the cows teats. By pumping with the lever the air is exhausted from the pail and suction produced upon the teats, which causes the milk to flow rapidly into the pail. This contrivance is said to be a good one, and to operate with success. It certainly has the merit of cheapness and simplicity.

Fruit Grinder and Press.

Wm. O. Hickock, of the Eagle Works, Harrisburgh, Pa., exhibits a newly patented portable apparatus for grinding and pressing fruit of all kinds, such as apples, currants, grapes, etc. Cider, currant and grape wine, etc., may be readily made for private use. From 6 to 12 barrels of cider can be made per day, by one man. The grinding is done by merely turning a crank. The pressing is effected by a powerful screw and lever. The machine occupies a space of only 2 1-2 by 3 feet, and weighs but 370 lbs. all complete. It is therefore very compact. Price $25 and up. For family use, in town or country, machines of this kind are "just the thing."

Car Springs.

F. M. Ray; of this city, exhibits large operating models of his volute car springs. Their elasticity and strength is shown by placing them under long levers, heavily weighted. We have seen a number of testimonials from experienced railroad officers, whose companies have these springs in use, and they speak of them in the highest terms. We understand Mr. Ray has an extensive demand for the spring, and that it gives full satisfaction.

P. G. Gardiner, of this city, also exhibits his newly patented volute springs for cars and other purposes. They are highly spoken of, and extensively manufactured.

Jno. W. Adams, of Harlem, N. Y., exhibits his new spring for cars, etc. It is composed of convex disks of steel placed between solid plates of iron. A very excellent spring is thus obtained, strong, durable, and comparatively cheap.

Speed and Bailey, Jersey City, N. J., exhibit their new corrugated plate car springs, which are composed of small metallic plates, having corrugated surfaces. The plates are piled together, and appear to form excellent springs.

Hall's Power Loom.

Another new Power Loom called the "Vic Loom," has been placed on exhibition. By certain devices in this loom, when the reed is beating up the filling, it is perfectly firm, but it will afterwards liberate itself entirely, and swing back, if the shuttle should be obstructed or fail to pass through the warp. All breakage or injury to the web by the obstruction of the shuttle in its race is in this manner prevented, and the common protector dispensed with. This loom can, therefore, be run at a very high, and also at a low velocity—from 80 to 220 picks per minute—without any rearrangement of its parts. It is a good loom, and occupies six inches less space than the common ones—an important advantage. The inventor is Elijah Hall, of Rochester, N. Y.; it was patented on the 12th of February last, and the price is only $55. Some of these looms are now in operation at Jones' Cotton Mill, Rochester, N. Y., and in Harmony Mills, Cohoes, N. Y., and another in the Steam Mill, at Newburg, N. Y.

Manufacturers of cotton cloth visiting the Fair, cannot but be favorably impressed with the improvements embraced in all the looms on exhibition. The parallel picker-staff motion of the Stockport looms has no equal, and the reed arrangement of Hall's loom is a peculiar and excellent invention. Patents for both looms were obtained through the Scientific American Patent Agency.

India Rubber Manufactures.

Vulcanized India Rubber fabrics are among the most astonishing triumphs of modern inventive genius, enterprise, and skill, and they had their origin and have their principal seats of manufacture in the United States. It is not many years since that all india rubber was only used for was erasing pencil marks from white paper; now it is manufactured into every variety of form, and applied to a countless number of useful purposes.

The united India Rubber Companies of our country make an excellent display of their goods in the North-West Gallery of the Palace; we have endeavored to collect a list of them, to show its adaptable character. The articles on exhibition consist of coats, pants, carriage cloths, piano and table covers, (beautifully printed in various colors) blankets, saddle and gas bags, aprons, beds, pillows, boots and shoes, hose and tubeing, life-preservers, bath mats, water buckets, hats and caps, bottles, drinking cups, diving, or submarine dresses, (one shown suspended, with a diver's helmet,) breast pumps, nursing bottles, cupping cups, water bags, gloves, all kinds of toys, balls, combs, packing for steam engines, belting for machinery, pencil cases, pen holders, pulleys, insulated telegraph wire, and valises in imitation of morocco leather. The nature of india rubber renders every article to which it is applied air and water tight, elastic, tough, and strong, not liable to be affected with the weather. These are qualities of an important and useful character. A very small amount of the india rubber in each article is sufficient to impart air and water-tight qualities to it; in fact, some india rubber goods, such as overshoes, contain but a mininium of the gum elastic, the rest being very cheap materials—hence enormous profits have been derived by the manufacturers of such goods. The best valve packing is made of 30 lbs. of india rubber, 6 lbs. of lampblack, 22 lbs. red or white lead, and 22 oz. of sulphur; these metalizing substances are all very cheap. India rubber is easily rendered plastic, and combines readily with almost every substance, such as the oxyds of metals, clay, pulverized sand, gums, carbon, sawdust, ground cork, &c. It is, certainly, one of the most wonderful and useful products of nature that has ever been applied to the arts.

Trial of Fire Engines.

Trials of steam fire engines took place last week at the Crystal Palace, in competition for the gold medal, between the machine of Lee & Learned, New York, and that of Sillsby, Mynderse & Co, of Seneca Falls, N. Y. These were the only steam fire engines exhibited.

Steam was raised to 45 lbs. pressure in Lee & Learned's machine in 11 1-4 minutes after lighting the fire, and the engine commenced throwing water. Through 65 feet of hose and a 1 3-8 inch nozzle, the distance thrown was 125 feet, and with a 1 1-4 inch nozzle, 178 feet horizontally.

Sillsby, Mynderse and Co.'s machine exhibited a pressure of 35 lbs. of steam in 24 minutes after lighting the fire, and threw the water 115 and 179 feet. This trial took place on Wednesday, and was not deemed satisfactory by Messrs. Sillsby & Mynderse. Another trial was, therefore, agreed to be made at 2 o'clock P. M. on Saturday.

On this occasion the engine of Lee & Learned commenced playing in 7 minutes after the fire was lighted, and in 10 1-2 minutes had a pressure of 140 lbs. in the boiler. It threw a stream horizontally of 171 feet 10 inches, out of a 1 1-4 inch. nozzle—solid column 120 feet; out of an 1 1-2 inch nozzle it threw a stream of 172 feet 4 inches—solid column, 116 feet.

Sillsby & Mynderse's machine commenced to play in 14 1-2 minutes after the fire was kindled. It threw a stream 167 feet horizontally out of a 1 1-4 inch nozzle—solid column 126 feet 4 inches. It played 20 minutes, when the steam got very low, and it then stopped. It did not do so well as on the previous trial. It could not generate steam in sufficient quantities to work it; while the engine of L. & L. from the moment it commenced working, never ceased, and seemed to have no difficulty in generating plenty of steam.

This was a very exciting trial. The place selected was alongside of the Croton Reservoir, outside of the Palace, and there was a great crowd present.

A Destructive Freshet.

It is difficult to account for the unexpected falls of rain which take place some times in certain localities. Thus the northern part of this State was visited with tremendous rains during the last week of September, by which great damage to property has been caused by he sudden and great rise of certain streams and rivers. The Essex County *Republican* states that the Ausable river rose higher than it was ever known before, and as there is a great deal of manufacturing carried on along its banks, much damage has been done. The dam at Keesville was carried away, and saw mills, grist mills, nail works, machine shops, and rolling mills were destroyed. At Clintonville a number of factories and saw mills were nearly destroyed; at Ausable Forks the destruction of property was also very great, and more lamentable than all, nine persons were drowned.

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C. A., of Me.—The greatest depth of descent by a diving bell recorded, so far as we know, was 170 feet. The figures to which you refer represent dollars and cents.—Biot & Guy Lussac ascended 13,000 feet in a balloon—the greatest balloon elevation known to us.

G. H. B., of N. Y.—Smoke is the result of imperfect combustion. Oxygen is the only element in nature to mix with your fuel to consume it. If you supply your fire with a greater quantity of air, and heat it before admitting it to the fire, such as by conducting it through tubes under the bottom of the grate, you will get rid of smoke.

B. A., of N. Y.—We published all we knew respecting the sewing machine.

C. H. W., of N. C.—The machine for making ice, to which you allude, is in Cleveland, Ohio, at the Sheboygan Works. We are not acquainted with its construction, but have no doubt that chemicals are used in it to produce a low degree of temperature. We believe that it cannot make ice as cheap as has been represented. A machine or process that could make ice cheap, would, as you state, be a grand acquisition to those regions; but such a machine, so far as our knowledge extends, has yet to be invented.

W. J. C., of N. C.—Hutchison's method of straining saws with a spring, illustrated on page 28, our last volume, is simple and good. Any of the plans for straining reciprocating saws, illustrated in our last volume, are good. It is impossible to tell which is the best, without practically testing it; and the same, we may add, is the case with re-action wheels for sawing and grinding purposes. Apply to the makers of them—those who have advertised in our columns, and those whose wheels have been illustrated—and bargain with the one who will fulfill the best conditions.

A. S., of Ky.—The article you send, on steam boiler explosions, was noticed by us when first published in the Intelligencer. It is not correct in its premises.

J. J. J., of Ala.—Bulkley's Kiln-Drying Apparatus is a good one, we believe. We would advise you to address him: H. G. Bulkley, Kalamazoo, Mich.

W. M. C., of Tenn.—We do not know that there is any demand for cedar bedsteads in this city.

G. W. H., of Ill.—Your offer is liberal, but we are not in a position to accept of it.

L. B. F., of Mich.—You want to know how to make blue and white colors for printing figures on muslin to be embroidered. Grind up some prussian blue, sold by all the druggists, into powder, and then mix it with a little gum water; use fine whiting in the same manner for your white color. These will answer your purpose. A little starch well boiled will answer as well as the gum.

J. J. W., of Ill.—You want to know the power of the water in your spring, which runs at the rate of 120 gallons per minute, and has a total fall of 27 1-2 feet. It is exactly one-horse power, from which one-fourth would have to be deducted if applied to a wheel. You also want to know how many pounds pressure on the piston of a steam engine 8 inches in diameter and 20-inch stroke, will be equal to the power of your spring. Such a comparison is curious, for with an engine of that size (and at a high pressure, as you state) a pressure of 10 lbs. on the square inch, and running only at the rate of 20 revolutions per minute is more than one horse power.

T. M. G., of Pa.—Send on your sketch for examination without delay. We make no charge for examining inventions and giving opinions in regard to their novelty. Inventors who wish to consult us on such matters, can do so freely, and we will furnish them with a printed circular of information free of charge. By delaying to secure your invention in time some one may get ahead of you. This is often done. We have the most extensive Patent Agency in the world, and our prices for preparing cases are very moderate.

A. G. C., of Vt.—Your invention caveated in 1843, embracing a claim for the combined use of steam and air, or steam alone, in a blast or other furnace, is quite different from that which has received the name of the "Bessemer process." It embraces a blast of air or steam and air, through the liquid metal, after it has been run from the furnace. The use of steam as a blast was patented in England in 1840.

G. B. O., of ——.—Perforated plates are now used in some ovens.

G P., of Mich.—We have the work of Liebig to which you refer, and referred to his opinions some years since, to sustain our views in a controversy respecting electro-magnetism as a motive power. We are obliged to you for your offers, however.

J. T., of Ohio—Use common plumber's solder to make the swell joints of lead pipes. It is composed of 66 parts of lead and 34 of tin.

R. B., of Conn.—Hunt's photography is published by Humphrey, 297 Broadway, this city, it is such a work as you want.

N. K. L., of Ala.—Hodge on the Steam Engine, is such a work as you want. It is published by D. Appleton & Co., this city. Price $10.

H. E. T., of N. Y.—There is no theory in existence so for as we are aware, respecting "how much weight a pile of 800 lbs will support under a ram of 1600 lbs. with a fall of 20 feet," Some of our readers may have adopted a theory on pile-driving from their own experience.

C. D. L., of Ill.—It is impossible for us to tell what quantity of water will flow through your ditch per minute, owing to its length, and having only six feet fall to the mile. The resistance of its sides and bottom to the passage of the water must be very great. If you, by experiment, will find out how much flows through it per minute, we will tell you what power it will take to raise it 100 feet high.

H. B., of Mass.—There are different kinds of iron ore, each of which require to be treated in a manner according to its nature, the carbonate must be treated in a different manner from the red or brown oxyd: therefore one process will not answer for all. The best iron is made from the magnetic oxyd.

C. J. W., of Ohio—The sulphate of zinc is the best drier you can employ to mix with your paint.

H. T., of Pa.—Resin is soluble in an alkali, and makes a kind of a soap; it is employed extensively in making common brown soap.

R. H. J., of Ky.—The fiber of the cypress bark is not so white in color as jute or indian hemp, but it is much stronger, and we think it might be made profitable to manufacture into small rope.

W. McD., of N. C.—Resin gas, we think, must be the cheapest for your State. It is easier to manufacture for public illumination than coal gas. You will find a full description of the method of manufacturing it in Parnell's Chemistry. Resin oil makes an excellent gas also, and as it is cheap in North Carolina it should be more extensively used. Many cotton factories at the North now use resin oil gas.

R. H., of N. Y.—Steam is employed in distilling various substances, such as coal oil, camphene, &c.

Money received at the SCIENTIFIC AMERICAN Office, on account of Patent Office business for the week ending Saturday, Oct. 18, 1856:—

S. B. H., of N. Y., $30; B. & P., of Wis., $30; T. H., of Pa., $30; J. J. P., of O., $25; S. B. H., of N. Y., $55; G & F., of N. Y., $30; J. H. Y., of Mo., $25; D. & R., of N. Y., $5; J. S., of Cal., $30; E. & G., of Vt., $30; G. C. 2d. of Conn., $25; J. M. J., of Ala., $10; L. S., of Conn., $30; J G. P., of N. Y., $250; L. W. B., of N. Y., $155; O. H. N, fN. Y., $30; J. C. S., of Mass., $250: V. N. M., of N C., $30; W. C., of L. I., $30; G. W. D., of N. Y., $30; C. W., of Conn., $30; C. H. B., of N. Y., $55; T. R. H., of Conn., $55; J. T. R., of N. Y., $25; G. S. B., of Conn., $55; W. W., of N. Y., $30; M. L., of N. Y., $25; O. O. W., of N. Y., $25; W. & M., of N. Y., $25; G. F., of L. I., $55; E. L. E., of Conn., $20; F. & B., of N. Y., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Oct. 18th:—

J J. P., of O.; M. L., of N. Y.; J. L., of Ohio. A. G. C., of Vt.; O. V. D. R., of Ill.; D. & R., of N. Y.; G. C., of Conn., 2nd.; J. H. Y., of Mo.; H. G., of Canada; A. D. B., of Prussia G. H., of L. I., O. O. W., of N. Y.; W. & M., of N. Y.; G. F., of L. I.; F. & B., of N. Y.

Important Items.

Subscribers to the SCIENTIFIC AMERICAN who fail to get their papers regularly will oblige the publishers by stating their complaints in writing. Those who may have missed certain numbers can usually have them supplied by addressing a note to the office of publication.

TO THE PRESS.—Any newspaper or publication which is entitled to the SCIENTIFIC AMERICAN on the terms prescribed in the Circular which was sent from this office a few weeks ago, and does not receive it regular, is requested to make complaint to this office, when the omission shall be promptly corrected.

INVENTORS SENDING MODELS to our address should always enclose the express receipt, showing that the transit expenses have been prepaid. By observing this rule we are able, in a great majority of cases, to prevent the collection of double charges. Express companies, either through carelessness or design, often neglect to mark their paid packages, and thus, without the receipt to confront them, they mulct their customers at each end of the route. Look out for them.

A WORD OF WARNING.—To those who have procrastinated in renewing their subscriptions, but still design to remit in a few days, we would say, be careful and not delay too long. The back numbers of the present volume are running low, and some of our friends are going to be disappointed, by and by, when they send in their subscriptions, and order the back numbers, by a short reply back, "Back numbers all gone."

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure but no name of State given, and often with the name of the post office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post of fice at which they wish to receive their paper, and the State in which the post office is located.

FOREIGN SUBSCRIBERS—Our Canada and Nova Scotia patrons are solicited to compete with our citizents for the valuable prizes offered on the next volume. [It is important that all who reside out of the States should remember to send 25 cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

PATENT LAWS AND GUIDE TO INVENTORS.—This pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office Price 12 1-2 cents per copy. A Circular, giving instructions to inventors in regard to the size and proper construction of their models with other useful information to an applicant for a patent, is furnished gratis a this office upon application by mail.

RECEIPTS—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

PATENT CLAIMS—Persons desiring the claim of any in vention which has been patented within fourteen years can obtain a copy by addressing a letter to this office stating the name of the patentee, and date of patent when known, and enclosing $1 as fees for copying.

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Twenty-five cents a line each insertion. We respectfully request that our patrons will make their advertisements as short as possible. Engravings cannot be admitted into the advertising columns.

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GRAND DISCOVERY, whereby the whole of the Bees in a bee-hive can be driven down on to a sheet or board and remain insensible for 10 or 15 minutes, and by setting a weak stock hive over them they will run up and make a strong family. The whole secret will be sent to any address by remitting one dollar by mail to the subscriber HUGH M. MOORE,
1* Painted Post, Steuben Co., N. Y.

CORN HUSKERS—I will send one to any person on receipt of $1. Warranted to save thirty to fifty per cent. of labor, and all sore fingers. Patent pending. Address J. HERVA JONES, Rockton, Winnebago Co., Ill. 7 3*

PLUMBEOLA Universal Patent Agency.—Plumbeola and Du Buque, Iowa. 6 6*

SWISS DRAWING INSTRUMENTS—A full stock of these celebrated instruments always on hand. Catalogues gratis. AMSLER & WIRZ,
7 6*eow 211 Chestnut st., Philadelphia.

IMPORTANT TO INVENTORS.

THE UNDERSIGNED having had TEN years' practical experience in soliciting PATENTS in this and foreign countries, beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousa* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of Engineers, Examiners, Draughtsmen, and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

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In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the SCIENTIFIC AMERICAN. This paper is read by not less than 100,000 persons every week, and enjoys a very wide spread and substantial influence.

Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency. MUNN & CO.

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J. R. STAFFORD'S FAMILY RECEIPT Book, Containing 150 Household Receipts, all of them practical, and most of them new to the public. Also accounts of several new discoveries and recent improvements interesting to Mechanics and Farmers. Also a condensed account of the most prominent diseases of the human body; what produces them, what will cure them, and why it will. Also 20 anatomical illustrations of the human body, conspicuously showing all the muscles, nerves, joints, blood vessels, heart, lungs, throat, brain, eye, ear, tongue, skin, bowels, and other interior organism. This book also contains a list of nearly 50 different subjects comprising inventions, discoveries, and information which, in the opinion of the London Society of Arts, are now required by the public and for which inventions, &c., they offer valuable premiums. The List affords a brilliant opportunity for the display of American talent and genius. Every mechanic and artist should possess it. The above book will be sent free of postage on receipt of Ten cents or three stamps, by J. R. STAFFORD, Practical Chemist, No. 16 State st., New York. 1*

BOONE'S PATENT ROPE MACHINE is an invention of great utility. Those who have had it in operation about six months, with a number of superintendants, who for workmanship have long been known to be at the head of their profession as rope manufacturers, unite in saying that it is by far the most superior machine for manufacturing small rope that they ever saw; that it makes a superior article of rope, occupies but about one half the room, works at double the speed with about one half the power of any other machine they know of. The patent is dated July 15th, 1856. The inventor, T. L. Boone, 7 Nassau st., Brooklyn, N. Y., prefers making cordage with them to selling, but would sell the right of a few States low, to raise funds to build a mill of his own, or supply a company with machinery, with a State right and take part with them in a Rope and Cordage Manufactory. 1*

SALE OF PATENTS—Great Central Inventors, Machinery, and Patent Right Depot, No. 212 Broadway, cor. of Fulton st., New York. Our experience in disposing of rights, and extensive acquaintance throughout the Union has induced us to establish branch and connecting offices in all the principal cities; therefore we have superior facilities for the purchase and sale of machinery, and for the sale of such valuable patent rights and patented articles as will bear actual demonstration. Good reference given. Address
1* A. & J. T. SPEER.

A REQUEST—LIBERAL OFFER.—We propose to send to every person in the United States, who is interested in the manufacture of lumber, or improved machinery, a full illustrated description of two valuable inventions. First,

THE COMBINATION PORTABLE STEAM SAW-MILL.—This is a new upright mill, so simple in its construction that any one can put it up and run it—is easily moved from place to place—may be easily shipped to any part of the country—is capable of cutting from six to ten thousand feet in every twenty-four hours; while, at the same time it is furnished at so low a rate as to bring it within the reach of almost every farmer and planter.

Second, RICE'S PATENT SPRING GUIDE.—The only effectual plan ever invented for guiding, steadying, and strengthening a circular saw, while in motion.

We wish, therefore, to obtain a list of all the machinists, lumbermen and saw-mill men in the United States, and to any person who will send us a list of such parties in his vicinity, and the address of each, we will send in return, a copy of the "United States Journal," the largest illustrated newspaper in the United States, for one year. In case we receive more than one list from the same locality, we shall send the "Journal" to the party from whom we receive the first list, only. The New England States are not included in this offer, as we have there already completed a list, as desired. J. M. EMERSON & CO., 1 Spruce street, New-York. 4 4

S. D. BARNETT, Malleable and Gray Iron Works, Hamilton cor. of McWhorter st., Newark, N. J. Orders promptly attended to. 6 10*

PATENT BUCKLE—The double-jointed buckle patented Sept. 2d. 1856, is claimed to be the best invention in the way of buckles for wearing apparrel, suspenders, &c., that has ever been produced. The entire patent, or territory in States may be bought cheap of the patentee. Address, for further particulars, WILLIAM SLADE, Gum Creek, Dooley Co., Ga. 6 2*

PORTABLE STEAM ENGINES.—S. C. HILLS No. 12 Platt st., N. Y., offers for sale these Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, from 2 to 10 horse power, suitable for printers, carpenters, farmers, planters, &c. A 2 1-2 horse can be seen in store, it occupies a space 5 by 3 feet, weighs 500 lbs., price $240; other sizes in proportion. 1 e3w

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description, Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Guage, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, Machinery Oil of the most approved kind, etc.
CHARLES W. COPELAND,
1 eowtf Consulting Engineer, 64 Broadway.

CLOCKS for Churches, Court Houses, &c. Regulators and time pieces for jewelers, railroads, offices, &c. Also glass dials of any size for illuminating, and other kinds manufactured and warranted by the subscriber.—JOHN SHERRY, Oakland Works, Sag Harbor, N. Y.
37 12 eow

CLARK'S PATENT WATER REGULATOR—The only perfect security against steam boiler explosions, caused by want of water. Every steam boiler should have one. Regulators sold and applied and rights for most of the States and Territories, for sale by S. C HILLS, 12 Platt st., N. Y. 1 4eow*

THE NEW YORK DAILY SUN for $2 a year. The miracle of the present age is accomplished by the Publisher of the New York Sun, in furnishing subscribers in clubs of thirty or more with the daily paper by mail for $2 a year. The Sun commenced in 1833; is the oldest, as well as the cheapest of all the cheap daily newspapers. It contains the latest news to be had by telegraph, mail, or express—is independent on all subjects, and has for its platform "Common Sense." Club rates—payable in advance, 5 copies one year $16·50; 10 copies $30; 15 copies $41·25; 20 copies $50; 25 copies $56·25; 30 copies $60. Single copies $4 a year. Papers to be sent in one wrapper, and only by mail, and to be directed to one person only. The postage on the Daily Sun within the State of New York is only 78 cents per year, and only $1·56 to any other part of the United States. Specimen copies sent gratis on application. Letters (always post paid) to be directed to MOSES S. BEACH, Sun Office, New York City. 37 tf

SUPERIOR MACHINISTS TOOLS—Slotting machines, Planers, Compound Planers, Lathes, Drills, Gear Cutters, &c., &c., constantly on hand, and made to order at short notice by CARPENTER & PLASS, 479 First Avenue, N. Y. 6 5*

WOODWORTH'S PATENT PLANING, Tonguing, and Grooving Machines.—The subscriber, from his twenty-four years' experience both in the use and manufacture of these unrivalled machines, is prepared to furnish them of a quality superior to any that can be procured elsewhere for the same money. Prices from $85 to $1550. Also several good second-hand Planing, Tonguing, and Grooving Machines for sale. Rights for sale in all the unoccupied towns in New York and Northern Pennsylvania. JOHN GIBSON,
5 12* Planing Mills, Albany, N. Y.

TO INVENTORS AND PATENTEES.—The undersigned has established an agency for the sale of patent rights in the city of Baltimore, at No. 34 Second street. PHILIP T. TYSON. 5 5*

IMPROVEMENT IN BORING MACHINES.—This improvement consists of an arrangement by which the auger can be driven in any direction the operator chooses, rendering the machine far superior to any other now in use. RICE & DRYDEN, Worcester, Mass. 4 4*

MACHINE BELTING, Steam Packing, Engine Hose.—The superiority of these articles manufactured of vulcanized rubber is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. New York Belting and Packing Co., JOHN H. CHEEVER, Treasurer, No. 6 Dey street, N. Y. 48 20*

KNITTING MACHINES—Circular and straight knitting machines of all sizes and gauges on hand and made to order. WALTER AIKEN, Franklin, N.H. 46 13*

PAGE'S PATENT PERPETUAL LIME KILN, will burn 100 barrels of lime with three cords of wood every 24 hours; likewise my coal kiln will burn 150 bushel with 1 tuh bituminous coal in the same time; coal is not mixed with limestone. Rights for sale.
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50 STEAM ENGINE—From 3 to 40-horse power also portable engines and boilers; they are first class engines, and will be sold cheap for cash. WM BURDON, 102 Front st., Brooklyn. 41 tf

GOLD QUARTZ MILLS of the most improved construction; will crush more quartz and do it finer than any machine now in use, and costs much less. WM BURDON, 102 Front st., Brooklyn. 41 tf

VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horsepowers, Smut Machines, Saw and Grist Mill irons and Gearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch.
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PAGE'S PATENT CIRCULAR SAW MILLS with Steam Engine and Boiler, on hand and for sale for $1500, at Schenck Machine Depot, 163 Greenwich st. New York. A. L. ACKERMAN. 49 10

BARREL MACHINERY—CROZIER'S PATENT is unrivalled in point of quality and quantity of work performed, and may be seen in constant operation at the Barrel Manufactory of the undersigned. For rights and machines address WELCH & CROZIER,
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TO CAR BUILDERS—For Sale, one new Upright Boring Mill for boring car wheels. Maker's price $600, will be sold for $300 cash. Address GEO. S. LINCOLN & CO., Hartford, Ct. 1tf

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OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer.
F. S. PEASE, 61 Main st., Buffalo, N. Y.
And W. S. ROWLAND & CO., Agents for Chicago, Ill.
N. B.—Reliable orders filled for any part of the United States and Europe. 1 tf

NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb, 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.

Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
Office for sale of rights at 27 State street, Boston, and Lowell, Mass, 45 6m*

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co., New Haven, Conn. 1 tf

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 1 tf

BOILER INCRUSTATIONS PREVENTED—A simple and cheap condenser manufactured by Wm. Burdon, 102 Front st., Brooklyn, will take every particles of lime or salt out of the water, rendering it as pure as Croton, before entering the boiler. Persons in want of such machines will please state what the bore and stroke of the engines are, and what kind of water is to be used. 41 tf

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Science and Art.

Natural Curiosities.

In Australia there is a beetle which has the peculiarly formed legs of the Kangaroo, and appears to be half kangaroo (on a small scale) and half insect. It is a grotesque creature, and from its appearance has received the name of "Kangaroo-Beetle."

In the same country there is also a bird (*Menura superba*) which has a tail resembling the ancient Greek lyre. The margin of the lyre is formed by two broad feathers on each side, which curve into scrolls at the upper end, while a number of delicate ones represent the wires in the middle. These birds are hunted for their tails, which form an object of curiosity and beauty in museums.

In the zoological kingdom there is a curious variety of shell called 'Harpa," from the bars with which it is marked having the resemblance of a harp. There is another shell called the "Bulina," which resembles a rose bud, and another which resembles a strawberry.

London and Old Rome.

Rome in the days of its glory was a magnificent and great city, but historical students assert that London already surpasses what that city was in her palmiest days. London has a population of 2,500.000, and what is very remarkable, it increases proportionably faster than any city in England. If it goes on increasing for half a century as it has during the past 50 years, it will then have a population of six millions. The Commissioners of Sewers in that city are now providing drainage for such a population. What a human hive!

Improvement in Paddle Wheels.

Abraham Houseworth, of 259 Houston st., N. Y., has now on exhibition at the Great Fair of the American Institute, Crystal Palace, N. Y., his improvement in Paddle Wheels, for which Letters Patent were granted Aug. 19th, 1856. Our engraving illustrates the improvement.

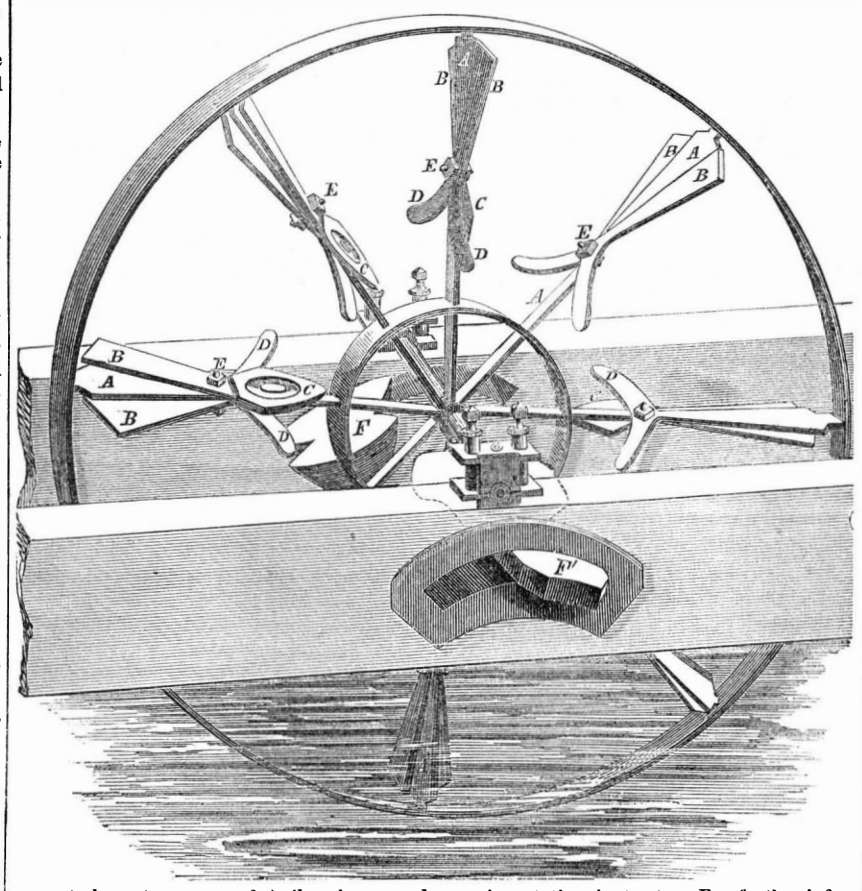
The principal objects of the invention are to prevent the injurious concussion and jarring caused by the common paddles in the act of entering the water; also to avoid the loss of power by the lifting of the back water, when the paddles emerge. For this purpose the paddles are made in three parts, the central portions, A, forming the spokes of the wheel, and the other portions, B B, being pivoted at E in pairs to A. The inner extremities of B B are furnished with projecting arms, C D, which are intended to strike upon the cam, F, as the wheel revolves and open the paddles. The opening or spread of the floats, B B, takes place just after they have entered the water. At the moment of entering the floats are folded together, so that only one-third of their actual surface is presented to the water, but after entering, the cam, F, causes them to open, or spread, so as to treble the propelling surface. In the act of emerging the paddles close again, and thus avoid the lifting of back water. When, therefore, the paddles reach that point where the greatest surface is needed, and where the power of the engine can be most advantageously employed, they open as described, but close in time to obviate the other difficulties named.

The cam, F, is movable, by means of its shank, F', which passes through a slot in the supporting beam for that purpose.

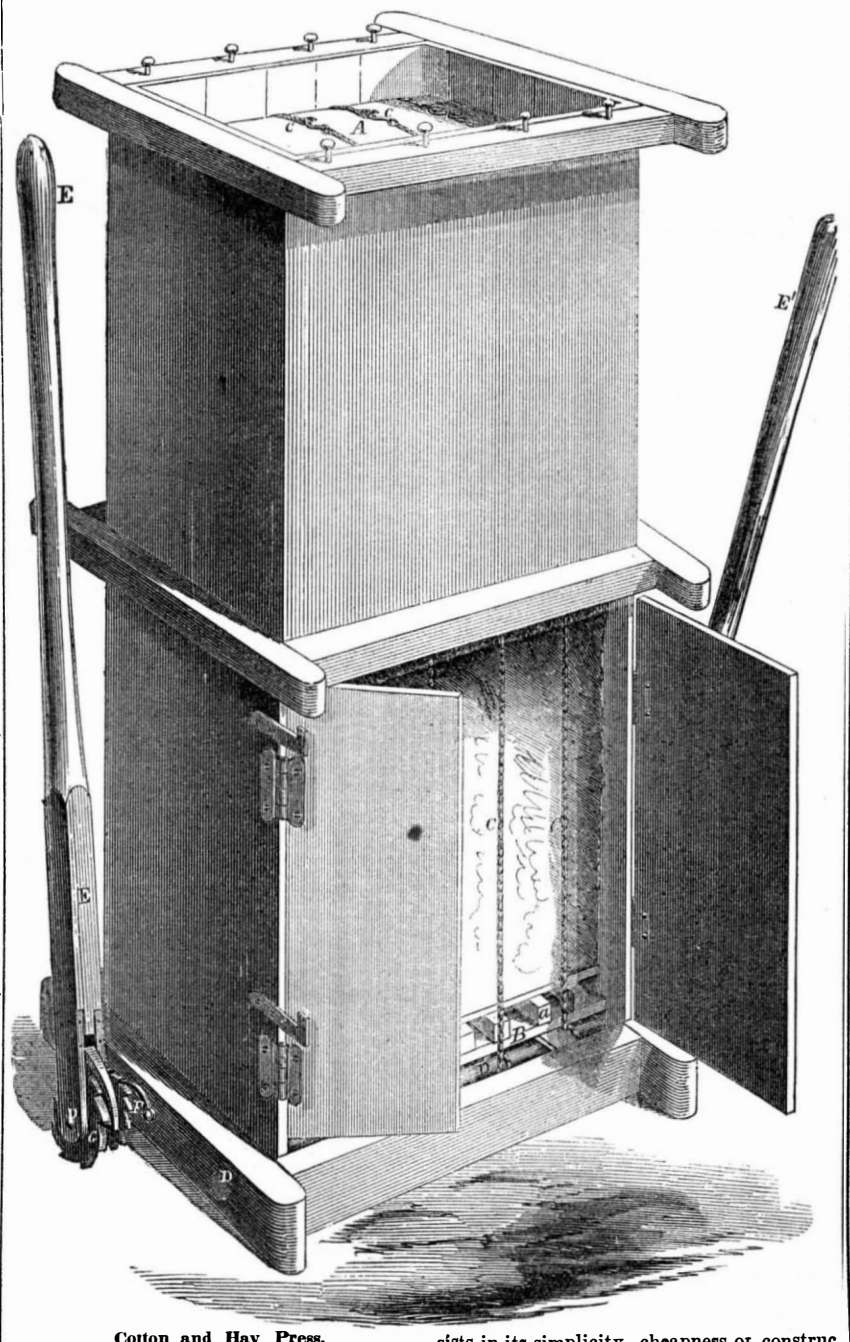
When it is desired to reverse the motion of the wheel, cam F is shifted to the opposite end of said slot. If cam F be moved so that its shank occupies the center of the slot, the floats will remain closed during the entire revolution of the wheel. The inventor proposes to make an advantageous use of this fact. By means of suitable rods and connections he will cause the cams to be shifted by a lever, located in the pilot-house of the boat, so that the pilot can, at pleasure, instantly alter the power of one or both wheels without causing the speed of the engine to be changed. If the paddles of one wheel are folded, and those of the other spread open, it is evident that greater force will be exerted on one side than the other, and that the vessel may be more quickly turned. Or the paddles of both wheels may be prevented from spreading, and the vessel's speed instantly reduced.

Instead of single arms, A, the inventor proposes to have two arms of similar shape, and to pivot the paddles, B B, between them. This will contribute to strength, prevent wearing at the pivot, etc. For further information apply at the Palace or address the inventor, as above.

NEW PADDLE WHEEL.



PRESS FOR HAY AND COTTON.



Cotton and Hay Press.

Our engraving is taken from a full-sized Press now on exhibition at the Crystal Palace. The chief merit of the improvement consists in its simplicity, cheapness or construction, durability and great power. The substance to be pressed is placed between the follower, A, and bottom board, B. The pressure is obtained by means of chains or cords, C, which extend over the follower, A, their ends winding upon roller shafts, D. There are two of these roller shafts, D, one on each side of the machine. They are rotated, respectively, by the levers, E E'. The roller shafts, D, project from the sides of the machine, far enough to receive the ratchet wheel and pawl, F, and also to receive the lower ends of levers E, which also have a ratchet and pawl, G. The office of the ratchet wheel and pawl, G, is to convey motion to shafts D, when power is applied to levers E E'. The purchase is retained by ratchet wheel and pawl F.

Whenever the shafts, D, are rotated in the proper direction, the cords, C, will be wound up, and the follower, A, pressed down towards the bottom board B. The degree of pressure is only limited by the length of the levers, E E' and the strength of the materials of which the machine is composed. The bottom board, B, is furnished with ribs, *a*, between which cords for binding the bales are passed. The under side of follower, A, is similarly provided.

It is almost needless to say that there are no parts connected with this machine that are likely to get out of order. Its compactness, ease of managemant, and economy of manufacture, with the other advantages described, render it worthy of public favor. For further information address the inventor, Jas. A. Disbrow, Poughkeepsie, N. Y. Patent applied for.

The Selma (Ala..) *Gazette* states that M. Dillard of that place, has grown 80 acres of "Boyd Cotton" this season, the yield of which has been very great—100 well-formed bolls being formed on a single stalk, on an average.

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